

April 17, 2006
ERI 261903.W02

Mr. John Mahoney
Redwood Oil Company
50 Professional Center Drive, Suite 100
Rohnert Park, California

SUBJECT Work Plan for Additional Groundwater Assessment
Redwood Oil Service Station 114
1855 Guerneville Road, Santa Rosa, California

Mr. Mahoney:

At the request of Redwood Oil Company (Redwood), Environmental Resolutions, Inc. (ERI) has prepared this Work Plan for additional assessment of dissolved-phase fuel hydrocarbons and related constituents in groundwater underlying the site. Redwood requested ERI to prepare this Work Plan in response to a directive from the California Regional Water Quality Control Board, North Coast Region (Regional Board), dated January 10, 2006 (Attachment A).

BACKGROUND

Site Description

The site is located on the northeastern corner of Guerneville Road and Marlow Road in Santa Rosa, California, as shown on the Site Vicinity Map (Plate 1). The site is currently owned by Redwood and operates as a Chevron-branded service station, with one 15,000-gallon and one 12,000-gallon double-walled fiberglass underground storage tank (UST), four dispenser islands, and a convenience store. The locations of existing USTs, dispenser islands, and other select features are shown on the Generalized Site Plan (Plate 2). The site is located within a mixed residential and commercial area of Santa Rosa and many of these properties use private wells for water supply.

Groundwater monitoring and sampling for dissolved-phase hydrocarbons and related compounds was initiated in September 1989. Additionally, groundwater sampling of select domestic water supply wells was initiated in April 1999. Cumulative groundwater monitoring and sampling data from the groundwater monitoring wells associated with the subject site are provided in Tables 1A and 1B. Monitoring data for select domestic wells are provided in Table 2, and analytical results form grab groundwater samples are provided in Table 3.

Soil and groundwater remediation activities at the site have included: soil excavation, installation of passive bailers for separate-phase hydrocarbon removal; soil vapor extraction (SVE); and groundwater extraction (GWE). Active remediation was discontinued in October 2004.

Two additional leaking underground fuel tank (LUFT) cases are reported near the site: an operating Shell-branded service station and car wash directly west of the site; and a 76-branded service station located directly south of the site. A dry cleaning facility is also located south of the site.

Site Histories

Redwood Oil Station

Redwood purchased the facility in 1978 and began operating the service station with three USTs; one 7,500-gallon fiberglass tank, one 6,000-gallon fiberglass lined steel tank, and one 8,000-gallon fiberglass tank. In 1981 the service station was rebuilt including the installation of an additional 12,000-gallon wrapped steel UST, new product lines, and new above ground facilities. Monitoring wells were installed and quarterly groundwater monitoring was initiated at the site in 1989. Petroleum Maintenance Corporation removed the four existing USTs and 1,000 cubic yards of soil from the site and replaced the tanks with two double-wall fiberglass compartmentalized USTs in 1993. A combined GWE/SVE system was installed at the site in 1995. The GWE system has recovered 1,024 pounds of methyl tertiary butyl ether (MTBE) and 31.81 pounds of total petroleum hydrocarbons as gasoline (TPHg). Groundwater sampling of select domestic water supply wells was initiated in April 1999. In 2005, Redwood installed well head treatment systems on three domestic wells located on neighboring properties.

Shell-Branded Station

A Shell-branded service station is located directly to the west of the site at 2005 Guerneville Road. Soil and groundwater assessment and quarterly groundwater monitoring began at the site in 1994. Thirty wells have been installed at the Shell station, of which seven are currently used for groundwater extraction. Interim remediation was performed at the site from July 2000 through February 2001, which consisted of intermittent removal of impacted groundwater using a vacuum truck. A total of 19,561 gallons of impacted groundwater containing 2 pounds of total petroleum hydrocarbons (TPH) and 27 pounds of MTBE were removed. A GWE system was installed at the site and began operations in June 2001. As of August 2005, the GWE system had removed 24.72 pounds of MTBE and 2.71 pounds of TPHg (Cambria, 2005). In the fall of 2005 overexcavation of impacted soil was performed at the site in conjunction with UST replacement at the station.

76-Branded Station

A 76-branded ConocoPhillips service station is located directly south of the site at 1950 Guerneville Road. Exploratory soil boring and groundwater monitoring at the site started in 1991. The station currently has a network of nine monitoring wells. In the third quarter of 2005 the groundwater was found to flow to the southwest under a calculated hydraulic gradient of 0.01 (TRC, 2005). The concentrations reported at the site range from less than 50 to 560 micrograms per liter ($\mu\text{g}/\text{L}$) TPHg, 1.4 $\mu\text{g}/\text{L}$ benzene, and 3,100 $\mu\text{g}/\text{L}$ MTBE.

Domestic Well Impact

Three domestic wells located near the Redwood site have been sampled since 1999. In 2005, well head treatment systems consisting of two liquid-phase granular activated carbon (GAC) filters in series were installed by Redwood on each of the three wells. Constituent concentrations in the wells at the wellhead or influent to the remediation systems have been consistently below laboratory reporting limits for TPHg, total petroleum hydrocarbons as diesel (TPHd), and benzene, toluene, ethylbenzene, and xylene isomers (BTEX). MTBE has been detected intermittently at a maximum concentration of 27 $\mu\text{g}/\text{L}$.

SUMMARY OF PERTINANT SITE CONDITIONS

Geology and Hydrogeology

Review of boring logs and cone penetration test (CPT) profiles for the subject site and the Shell-branded facility indicates that the area is underlain by a heterogeneous sequence of alluvial sediment consisting of relatively

fine-grained, low permeability sediment with irregular layers of sandy and gravelly sediments to approximately 120 feet below ground surface (fbgs), the maximum depth explored. Based on cumulative work at the Shell-branded station at 2005 Guerneville Road, four water-bearing zones (Zones A, B, C, D) were identified underlying that facility. ERI has identified relatively coarse-grained sediments at similar stratigraphic intervals underlying the Redwood site. In general, the units correlate moderately well with those identified at the Shell-branded facility, but differences are apparent. ERI's interpretation of the distribution and correlation of the relatively coarse-grained water-bearing zones underlying the two sites is shown on CPT Cross Section A-A' (Plate 3); the trace of the cross section is shown on Plate 4. A description of the water-bearing zones identified by ERI follows.

Zone A: Zone A comprises the water-table aquifer underlying both sites. Based on the CPT profiles (Plate 3), it ranges to a maximum depth of approximately 25 fbgs at both sites. However, at the Shell-branded site, the upper 10 to 15 feet appear to have a higher proportion of coarser-grained sediment. At the Shell-branded site 19 wells are screened within Zone A (excluding EW1 and EW2, screened within the UST pit). Groundwater is extracted from this unit, and groundwater flow is generally to the southeast under a hydraulic gradient ranging from 0.07 to 0.20. At the Redwood site, there are currently nine wells screened in this unit; the groundwater flow direction and hydraulic gradient are generally highly variable, with groundwater mounds or sinks and radial flow commonly observed (Plates 5 through 8).

Zone B: Zone B occurs under the Shell-branded facility at a depth of approximately 32 to 38 fbgs, and is approximately 15 to 20 feet thick. There are five wells at the Shell-branded site screened in the upper portion of this unit, and recent (2005) groundwater elevation maps generally show radial-inward flow, most likely due to groundwater extraction. Coarse-grained sediments are apparent at a similar depth interval on the CPT profiles for the Redwood site (Plate 3). At the Redwood site, this unit occurs at approximately 40 fbgs, and has variable thickness. However, the layers are not as well developed (e.g. CPT2), or are much thinner (e.g. CPT4). Coarse-grained beds that are correlatable to beds underlying the Shell-branded site pinch or grade out to the east and northeast, and are not present in Redwood borings CPT5 and CPT6. There are no monitoring wells installed in this zone at the Redwood site, and the groundwater flow direction and hydraulic gradient are not known.

Zone B₁: This unit comprises a single coarse-grained bed identified only at CPT3 and CPT4 on the Redwood site. It is approximately 5 feet thick, and is located between Zone B and Zone C. The beds identified in CPT3 and CPT4 are probably not continuous.

Zone B₂: This unit comprises a relatively thick coarse-grained sequence identified at CPT5 and CPT6, east and northeast of the Redwood facility. It is approximately 20 feet thick, occurs from approximately 50 to 70 fbgs, and does not correlate with other Zone B or Zone C beds.

Zone C: This unit comprises a series of relatively coarse-grained beds identified under the Shell-branded facility, the Redwood facility, and the area east and northeast of the Redwood facility. The unit is approximately 10 to 12 feet thick and occurs at a depth interval of approximately 66 to 76 fbgs at Shell CPT5. It occurs at a deeper interval to the east, approximately 76 to 84 fbgs at the location of CPT6. This unit is notable because it is correlatable across the entire area. Three monitoring wells are installed in this unit at the Shell-branded facility. Recent groundwater elevation maps for that site show groundwater flow within this unit to be toward the north-northwest and northwest. There are no monitoring wells installed in this unit at the Redwood facility.

Zone D: Zone D consists of a sequence of coarse-grained beds approximately 8 to 10 feet thick. It underlies the Shell-branded facility at approximately 86 to 92 fbgs. At the Redwood site, it occurs at a slightly deeper interval. There is one monitoring well installed in this unit at the Shell-branded site, and none at the Redwood site. The groundwater flow direction and hydraulic gradient are not known.

Zone E: This unit comprises a coarse-grained layer identified at approximately 120 fbsgs in Redwood CPT profiles at CPT4, CPT5, and CPT6. This depth interval has not been explored at the Shell-branded facility. The groundwater flow direction and hydraulic gradient in this unit are not known.

Distribution of Dissolved-Phase Hydrocarbons

Dissolved-phase fuel hydrocarbon concentrations for the Redwood site are summarized in Tables 1A and 1B. Time-series isoconcentration maps for select dates and constituents are included as Attachment B.

Maximum and recent concentrations of gasoline hydrocarbons (quantitated as TPHg), benzene, MTBE, and tertiary butyl alcohol (TBA) within the hydrostratigraphic units described above at both the Shell-branded site and the Redwood site are summarized in Table 4.

Diesel-range fuel hydrocarbons were reported in samples collected during the CPT exploration at the Redwood site at concentrations up to 350 µg/L (ERI, November 2005). However, in samples subjected to silica gel filtration, chromatogram patterns of typical diesel fuel were not present.

Discussion and Conclusions

The geochemical characteristics and distribution of dissolved-phase hydrocarbons in relation to the hydrogeological setting described previously indicate the following:

- Gasoline hydrocarbons and MTBE are present in groundwater in Zone A underlying both the Shell-branded and Redwood facilities. Isoconcentration maps for August 2005 (Attachment B) indicate that the plumes within Zone A did not appear commingled at that time. The dissolved-phase plume underlying the Redwood site comprises predominantly TPHg and BTEX, with subordinate MTBE. The plume at the Shell-branded facility has markedly higher concentrations of MTBE. The presence and relative concentrations of TBA suggest natural biodegradation and subsequent breakdown of MTBE to TBA has occurred.
- At the Shell-branded facility, dissolved-phase gasoline constituents, including MTBE, have migrated vertically downward into Zone B. Concentrations of MTBE up to 11,000 µg/L have been present; in August 2005 the maximum reported concentration was 4,600 µg/L. The presence and relative concentrations of TBA suggest that natural biodegradation has occurred. Coarse-grained beds within Zone B under the Redwood site do not appear as correlatable or as well-developed as at the Shell-branded facility (Plate 3), and the correlatable beds present pinch or grade out to the east and northeast. In groundwater samples collected from Zones B, B₁, and B₂ under the Redwood facility, TPHg was present in one of 12 samples at a concentration of 59 µg/L; benzene was not present in reportable concentrations; MTBE was reported in 4 of 9 samples at a maximum concentration of 1.8 µg/L. In ERI's opinion, the reported constituent concentrations in Zones B, B₁ and B₂, and the discontinuous and limited extent of correlatable coarse-grained beds to the east and northeast, do not warrant additional assessment of Zone B at the Redwood site.
- At the Shell-branded site, dissolved-phase gasoline constituents, including MTBE, have been identified in Zone C; the maximum reported MTBE concentration was 130 µg/L. TPHg has been reported at a maximum concentration of 72 µg/L, and benzene has not been present in reportable concentrations. The vertical distribution and relative constituent concentrations are consistent with vertically downward migration from Zone B with retardation of aliphatic and aromatic hydrocarbons due to sorption in the intervening fine-grained sediment. In samples of groundwater collected from Zone C under the Redwood facility and areas to the east and northeast, TPHg was present in one of the eight samples, at 300 µg/L; BTEX compounds were not present in reportable concentrations; MTBE was present in all samples at a maximum concentration of 55 µg/L. The reported MTBE concentrations exceed numerical water quality goals and primary and secondary maximum contaminant levels (MCLs) established by the Regional Board and State of California, respectively. The vertical distribution and relative constituent concentrations of MTBE are consistent with vertically downward migration from Zone

A; however the relative concentrations are not consistent with downward migration from Zone B. A downward vertical migration pathway has not been identified at the Redwood site. The relative constituent concentrations of MTBE are also consistent with lateral migration in Zone C from an offsite source.

- A maximum concentration of MTBE of 93 µg/L has been reported in groundwater from the Zone D monitoring well at the Shell-branded facility; benzene and TPHg have not been present in reportable concentrations. MTBE, benzene and TPHg were not present in reportable concentrations in one sample collected during CPT exploration at the Redwood site. In ERI's opinion, additional assessment of Zone D under the Redwood facility is not warranted.
- Zone E has not been explored at the Shell-branded facility. TPHg was detected in one of three groundwater samples collected during CPT exploration at the Redwood site, at a concentration of 310 µg/L; BTEX compounds and MTBE were not present in reportable concentrations.
- In Redwood well MW10 (located northeast of the site and close to a domestic well DM2050) BTEX compounds have been sporadically detected; MTBE has been detected in only one of 21 monitoring events (Table 1A). In contrast, BTEX compounds have not been reported in samples from domestic well DM2050, while MTBE has been detected persistently since October 2000. Similarly, BTEX compounds have not been reported in samples from domestic well DM1815, while MTBE was historically reported at concentrations up to 1.3 µg/L. Based on these data, ERI concludes that the source of MTBE in domestic wells DM1815 and DM2050 is Zone C (these wells most likely produce predominantly from Zone B₂); and that these wells are not impacted by the dissolved-phase plume in Zone A at the Redwood facility.
- The diesel-range hydrocarbons reported in samples collected during the CPT assessment at the Redwood facility were not representative of diesel fuel, and do not warrant additional assessment.

PROPOSED WORK

Based on the geochemical and hydrogeological conditions, Redwood has authorized installation of two monitoring wells (MW10C, MW11C) in the locations shown on Plate 2. These wells will be screened exclusively within coarse-grained sediments in Zone C, and will be used to monitor dissolved MTBE concentrations, to evaluate groundwater flow directions and horizontal hydraulic gradients within the unit (in conjunction with the wells installed in Zone C at the Shell-branded facility), and to evaluate vertical hydraulic gradients between the water table aquifer and Zone C (in conjunction with wells MW10 and MW11).

The proposed work is discussed in the following subsections:

Task 1: Permitting, Clearing and Notifications

As part of pre-field work activities, ERI will:

- Negotiate access with appropriate property owners to install the off-site groundwater monitoring well.
- Prepare, submit, and obtain drilling permits from the County of Sonoma Department of Health Services, Environmental Health Division (the County).
- Contact Underground Service Alert (USA) and a private utility locating contractor to coordinate utility locating activities.

Task 2: Monitoring Well Installation

As part of well installation activities, ERI will:

- Obtain the services of a licensed well driller and observe the clearance of each boring location to 4 fbs using a hand-auger.

- Observe advancement of borings MW10C and MW11C using a hollow-stem drilling rig. The approximate proposed boring locations are shown on Plate 2; actual locations may be subject to change based on access restrictions or site conditions at the time of drilling. The borings will be advanced through the relatively coarse-grained sediments previously identified in CPT1 and CPT4.
- Observe the driller install a 2-inch diameter monitoring well with a maximum screen interval of 10 feet, from approximately 75 to 85 fbs, or across a relatively coarse-grained layer identified during drilling. Well construction may be changed in the field, based on conditions observed at the time of drilling.

Soil cuttings generated during field activities will be placed in drums, and temporarily stored on site pending characterization, profiling, and transportation to a Redwood-approved disposal facility by Redwood. ERI will collect a composite soil sample (four brass sleeves) for submittal to a California state certified laboratory, under Chain-of-Custody protocol, for analysis of TPHd using EPA Method 8015B; BTEX, TPHg, and MTBE using EPA Method 8260B; and total lead using EPA Method 6010B. Rinse water generated during field activities will be properly contained, labeled, and temporarily stored on site pending transportation to a Redwood-approved disposal or recycling facility by Redwood.

Task 3: Monitoring Well Development and Sampling

As part of this task, ERI will:

- Develop monitoring wells MW10C and MW11C a minimum of 72 hours after installation using surging and over-pumping techniques.
- Collect groundwater samples from the newly installed wells a minimum of 72 hours after development. These wells will be sampled during the next scheduled quarterly monitoring event.

Task 4: Reporting

ERI will prepare a report summarizing the field work and methods, the results of laboratory analyses, our interpretations and findings, and recommendations for additional work.

DOCUMENT DISTRIBUTION

ERI recommends forwarding copies of this report to:

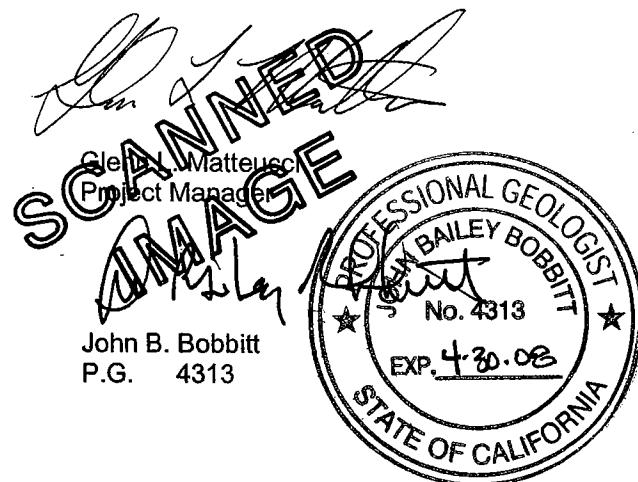
Ms. Joan Fleck
California Regional Water Quality Control Board, North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, California 95403

LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental practice in California at the time this investigation was performed. This report has been prepared for Redwood Oil Company, and any reliance on this report by third parties shall be at such party's sole risk.

Please call Mr. Glenn L. Matteucci, ERI's project manager for this site, at (707) 766-2000 with questions or comments regarding this work plan.

Sincerely,
Environmental Resolutions, Inc.

**Attachments:** References

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|-----------|---|
| Table 1A: | Cumulative Groundwater Monitoring and Sampling Data |
| Table 1B: | Additional Cumulative Groundwater Monitoring and Sampling Data |
| Table 2: | Cumulative Monitoring and Sampling Data for Private Water Well and Well Head Treatment System |
| Table 3: | Laboratory Analysis Results of Grab Groundwater Samples |
| Table 4: | Summary of Constituent Concentrations within Water-Bearing Zones |
| Plate 1: | Site Vicinity Map |
| Plate 2: | Generalized Site Plan |
| Plate 3: | CPT Cross Section A-A' |
| Plate 4: | CPT Cross Section Location Map |
| Plate 5: | Groundwater Elevation Map, April 6, 2004 |
| Plate 6: | Groundwater Elevation Map, April 22, 2005 |
| Plate 7: | Groundwater Elevation Map, August 24, 2005 |
| Plate 8: | Groundwater Elevation Map, March 8, 2006 |
- Attachment A: Regulatory Correspondence
Attachment B: Time Series Isoconcentration Maps

REFERENCES

Sierra Environmental Services. October 28, 1993. Tank Removal & Soil Excavation, Redwood Service Station #114, 1855 Guerneville Road, Santa Rosa, California. SES Project #3-508-03

Cambria Environmental Technology, October 12, 2005. Groundwater Monitoring and Remediation Report, Third Quarter 2005, Shell-branded Service Station, 2005 Guerneville Road, Santa Rosa, California, Incident #: 98996132, SAP Code: 136090; RWQCB Case No. ITSR277.

Cambria Environmental Technology, Inc. November 10, 2001. Site Investigation Report/Groundwater Monitoring Report, Fourth Quarter 2001, Shell-branded Service Station, 2005 Guerneville Road, Santa Rosa, California, Incident #: 98996132, SAP Code: 136090; RWQCB Case No. ITSR277.

ECM Group June 10, 2002. Subsurface Investigation Report, Redwood Oil Service Station #114, 1855 Guerneville Road, Santa Rosa, California. ECM Project #98-508-32

Environmental Resolutions, Inc., November 3, 2005. Supplemental Evaluation of Groundwater and Domestic Well Head Treatment Installation, Redwood Oil Facility 114, 1855 Guerneville Road, Santa Rosa, California.

TRC, October 20, 2005. Quarterly Monitoring Report, July through September 2005.

TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Redwood Oil Facility 114
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Well ID	Sample Date	TOC (fmsl)	DTW (fbgs)	GW Elev. (fmsl)	TPHd ($\mu\text{g/L}$)	TPH Diesel-range ($\mu\text{g/L}$)	TPHg ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	B ($\mu\text{g/L}$)	T ($\mu\text{g/L}$)	E ($\mu\text{g/L}$)	X ($\mu\text{g/L}$)
MW1	09/01/89	108.21	15.20	93.01	--	--	--	--	--	--	--	--
MW1	06/01/90	108.21	9.61	98.60	--	--	--	--	--	--	--	--
MW1	02/01/91	123.18	13.48	109.70	210	--	2,200	--	370	99	88	180
MW1	03/01/91	123.18	12.10	111.08	--	--	--	--	--	--	--	--
MW1	04/01/91	123.18	6.07	117.11	--	--	--	--	--	--	--	--
MW1	05/16/91	123.18	10.24	112.94	60	--	2,900	--	370	38	80	120
MW1	06/07/91	123.18	12.36	110.82	--	--	--	--	--	--	--	--
MW1	07/01/91	123.18	12.76	110.42	--	--	--	--	--	--	--	--
MW1	08/01/91	123.18	15.17	108.01	--	--	--	--	--	--	--	--
MW1	08/16/91	123.18	16.01	107.17	60	--	1,800	--	590	16	77	69
MW1	09/09/91	123.18	16.34	106.84	--	--	--	--	--	--	--	--
MW1	10/04/91	123.18	16.47	106.71	--	--	--	--	--	--	--	--
MW1	11/06/91	123.18	15.20	107.98	--	--	--	--	--	--	--	--
MW1	12/06/91	123.18	14.00	109.18	530	--	1000	--	460	23	51	66
MW1	01/06/92	123.18	12.24	110.94	--	--	--	--	--	--	--	--
MW1	02/19/92	123.18	7.80	115.38	--	--	--	--	--	--	--	--
MW1	03/30/92	123.82	6.74	117.08	470	--	2600	--	600	0.5	100	130
MW1	04/23/92	123.82	7.76	116.06	--	--	--	--	--	--	--	--
MW1	05/18/92	123.82	9.69	114.13	--	--	--	--	--	--	--	--
MW1	06/16/92	123.82	11.91	111.91	<50	--	6000	--	1100	110	150	300
MW1	07/24/92	123.82	14.90	108.92	--	--	--	--	--	--	--	--
MW1	08/18/92	123.82	14.94	108.88	--	--	--	--	--	--	--	--
MW1	09/24/92	123.82	15.59	108.23	1600	--	16000	--	2400	52	310	320
MW1	10/21/92	123.82	15.59	108.23	--	--	--	--	--	--	--	--
MW1	11/16/92	123.82	15.41	108.41	--	--	--	--	--	--	--	--
MW1	12/16/92	123.82	9.78	114.04	100	--	70	--	4.5	0.5	0.7	1.2
MW1	01/13/93	123.82	6.34	117.48	--	--	--	--	--	--	--	--
MW1	02/23/93	123.82	7.48	116.34	--	--	--	--	--	--	--	--
MW1	03/17/93	123.82	8.68	115.14	710	--	<50	--	0.5	0.5	0.5	0.5
MW1	04/16/93	123.82	7.78	116.04	--	--	--	--	--	--	--	--
MW1	05/14/93	123.82	8.48	115.34	--	--	--	--	--	--	--	--
MW1	09/30/93	123.82	15.45	108.37	330	--	2300	--	930	21	38	50
MW1	03/22/94	123.25	7.52	115.73	540	--	5,900	--	610	24	55	44
MW1	09/22/94	123.25	13.70	109.55	70	--	5,800	--	1,500	86	210	340
MW1	03/24/95	123.25	3.76	119.49	370	--	1,500	--	260	30	58	85
MW1	08/30/95	123.25	11.81	111.44	390	--	12,000	--	2,800	210	410	580
MW1	03/19/96	123.25	5.52	117.73	<50	--	730	--	230	18	54	46
MW1	09/16/96	123.25	17.30	105.95	<50	--	470	--	74	20	18	32
MW1	03/24/97	123.25	14.27	108.98	70	--	170	--	21	8.7	6.7	11
MW1	09/29/97	123.25	18.00	105.25	60	--	550	--	74	21	28	44
MW1	04/30/98	123.25	7.55	115.70	<50	--	250	--	25	3.0	11	13
MW1	07/30/98	123.25	11.83	111.42	<50	--	4,000	24	510	170	180	240
MW1	10/27/98	123.25	23.97	99.28	<50	--	490	6	8	3	3	4

TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA

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TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Redwood Oil Facility 114
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Well ID	Sample Date	TOC (fmsl)	DTW (fbgs)	GW Elev. (fmsl)	TPHd (µg/L)	TPH Diesel-range (µg/L)	TPHg (µg/L)	MTBE (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
MW2	02/19/92	122.68	6.05	116.63	---	---	---	---	---	---	---	---
MW2	03/30/92	123.14	6.55	116.59	---	---	---	---	---	---	---	---
MW2	04/23/92	123.14	6.24	116.90	---	---	---	---	---	---	---	---
MW2	05/18/92	123.14	7.09	116.05	---	---	---	---	---	---	---	---
MW2	06/16/92	123.14	7.65	115.49	---	---	---	---	---	---	---	---
MW2	07/24/92	123.14	9.51	113.63	---	---	---	---	---	---	---	---
MW2	08/18/92	123.14	9.50	113.64	---	---	---	---	---	---	---	---
MW2	09/24/92	123.14	8.97	114.17	---	---	---	---	---	---	---	---
MW2	10/21/92	123.14	8.73	114.41	---	---	---	---	---	---	---	---
MW2	11/16/92	123.14	8.64	114.50	---	---	---	---	---	---	---	---
MW2	12/16/92	123.14	7.07	116.07	---	---	---	---	---	---	---	---
MW2	01/13/93	123.14	5.78	117.36	---	---	---	---	---	---	---	---
MW2	02/23/93	123.14	10.19	112.95	---	---	---	---	---	---	---	---
MW2	03/17/93	123.14	8.41	114.73	---	---	---	---	---	---	---	---
MW2	04/16/93	123.14	6.75	116.39	---	---	---	---	---	---	---	---
MW2	05/14/93	123.14	8.47	114.67	---	---	---	---	---	---	---	---
MW2	09/30/93	123.14	13.61	109.53	---	---	---	---	---	---	---	---
MW2	03/22/94	123.14	6.34	116.80	25,000	---	25,000	---	370	670	640	3,400
MW2	09/22/94	123.20	8.40	114.80	30,000	---	51,000	---	730	1,700	1,700	8,300
MW2	03/27/95	123.20	5.92	117.28	---	---	---	---	---	---	---	---
MW2	08/30/95	123.20	7.96	115.24	---	---	---	---	---	---	---	---
MW2	03/19/96	123.20	6.14	117.06	13,000	---	19,000	---	120	79	540	1,600
MW2	09/16/96	123.20	7.15	116.05	---	---	---	---	---	---	---	---
MW2	03/24/97	123.20	5.00	118.20	32,000	---	53,000	---	650	1,000	3,000	13,000
MW2	09/29/97	123.20	7.16	116.04	---	---	---	---	---	---	---	---
MW2	04/30/98	123.20	4.83	118.37	1,600	---	64,000	---	390	0.5	1,600	5,700
MW2	07/30/98	123.20	5.87	117.33	77,000	---	340,000	<5.0	640	290	3,000	8,200
MW2	10/27/98	123.20	7.32	115.88	1,200,009	---	110,000	6	240	50	1,400	3,000
MW2	01/27/99	123.20	4.67	118.53	29,000	---	31,000	<500	240	92	1,500	3,200
MW2	04/21/99	123.20	6.28	116.92	120,008	---	19,000	40	48	85	290	1,100
MW2	07/29/99	123.20	7.92	115.28	14,000	---	16,000	260	110	50	500	450
MW2	10/28/99	123.20	20.30	102.90	120,008	---	190,000	<50	960	770	5,100	1,300
MW2	02/04/00	123.20	7.89	115.31	8,100	---	9,300	60	13	42	130	440
MW2	04/27/00	123.20	13.25	109.95	5,700	---	19,000	240	1,400	900	710	2,000
MW2	07/25/00	123.20	8.77	114.43	1,700	---	11,000	3.21	52	20	55	120
MW2	10/26/00	123.20	15.42	107.78	2,000	---	10,000	57	380	200	310	650
MW2	01/17/01	123.20	8.75	114.45	4,900	---	4,100	19	190	39	170	310
MW2	04/24/01	123.20	16.24	106.96	5,000	---	3,400	84	130	42	170	270
MW2	07/31/01	123.20	11.11	112.09	4,600	---	3,900	<50	290	22	110	70
MW2	12/05/01	122.57	23.00	99.57	1,700	---	6,200	6.5	120	110	90	490
MW2	01/31/02	122.57	23.00	99.57	1,100	---	370	<5	4.2	2.1	3	18.8
MW2	04/17/02	122.57	18.10	104.47	1,100	---	910	74	35	16	9	62
MW2	07/10/02	122.57	18.25	104.32	2,100	---	920	45	22	4	1	26

TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Redwood Oil Facility 114
 1855 Guerneville Road
 Santa Rosa, California
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Well ID	Sample Date	TOC (fmsl)	DTW (fbgs)	GW Elev. (fmsl)	TPHd (µg/L)	TPH Diesel-range (µg/L)	TPHg (µg/L)	MTBE (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
MW2	10/10/02	122.57	18.16	104.41	2,100	--	120,024	52	1.1	4.7	18	12
MW2	01/13/03	122.57	5.18	117.39	4,200	--	1,600	<2	16	<5	--	--
MW2	03/14/03	122.57	17.85	104.72	--	--	--	--	--	<1	<1	1
MW2	04/16/03	122.57	14.50	108.07	520	--	<50	14	4	<1	--	--
MW2	07/16/03	122.57	18.50	104.07	2,300	--	1,100	67	66	4	26	13
MW2	10/21/03	122.57	14.69	107.88	5,800	--	2,700	100	190	9	140	29
MW2	04/06/04	122.57	14.69	107.88	<210	--	420	8.7	2.7	1.2	0.9	6
MW2	12/31/04	122.57	3.84	118.73	1,000	--	1,100	<1	24	1.5	22	8
MW2	04/22/05	122.57	4.27	118.30	2,200a	--	4,900	<5	21	7.7	14	52
MW2	08/24/05	122.57	6.74	115.83	4,300b	--	5,100c	<5.0	7.1	<2.5	3.0	<2.5
MW2	03/08/06	122.57	3.21	119.36	<300	--	1,200	<0.50	12	0.80	13	1.4
MW3	09/01/89	106.88	14.14	92.74	--	--	--	--	--	--	--	--
MW3	10/06/89	106.88	--	--	--	--	85,700	--	720	2,640	720	7,860
MW3	06/01/90	106.88	8.44	98.44	--	--	--	--	--	--	--	--
MW3	11/15/90	106.88	--	--	1,300	--	16,000	--	1,000	420	<50	2,000
MW3	02/01/91	122.73	11.35	111.38	1,500	--	22,000	--	2,400	1,300	940	3,100
MW3	03/01/91	122.73	9.83	112.90	--	--	--	--	--	--	--	--
MW3	04/01/91	122.73	5.84	116.89	--	--	--	--	--	--	--	--
MW3	05/16/91	122.73	9.48	113.25	1,400	--	21,000	--	1,800	1,000	710	2,300
MW3	06/07/91	122.73	10.95	111.78	--	--	--	--	--	--	--	--
MW3	07/01/91	122.73	7.20	115.53	--	--	--	--	--	--	--	--
MW3	08/01/91	122.73	12.85	109.88	--	--	--	--	--	--	--	--
MW3	08/16/91	122.73	14.15	108.58	960	--	16,000	--	1,400	730	120	1,200
MW3	09/09/91	122.73	14.42	108.31	--	--	--	--	--	--	--	--
MW3	10/04/91	122.73	14.57	108.16	--	--	--	--	--	--	--	--
MW3	11/06/91	122.73	13.28	109.45	--	--	--	--	--	--	--	--
MW3	12/06/91	122.73	12.34	110.39	3,600	--	19,000	--	2,300	1,000	690	1,900
MW3	01/06/92	122.73	10.42	112.31	--	--	--	--	--	--	--	--
MW3	02/19/92	122.73	5.79	116.94	--	--	--	--	--	--	--	--
MW3	03/30/92	122.73	6.07	116.66	3,900	--	12,000	--	580	590	320	2,000
MW3	04/23/92	122.73	7.46	115.27	--	--	--	--	--	--	--	--
MW3	05/18/92	122.73	9.13	113.60	--	--	--	--	--	--	--	--
MW3	06/16/92	122.73	10.51	112.22	21,000	--	17,000	--	2,100	1,300	620	2,000
MW3	07/24/92	122.73	12.92	109.81	--	--	--	--	--	--	--	--
MW3	08/18/92	122.73	13.04	109.69	--	--	--	--	--	--	--	--
MW3	09/24/92	122.73	13.96	108.77	5,800	--	72,000	--	1,500	350	600	1,600
MW3	10/21/92	122.73	13.40	109.33	--	--	--	--	--	--	--	--
MW3	11/16/92	122.73	13.88	108.85	--	--	--	--	--	--	--	--
MW3	12/16/92	122.73	8.40	114.33	140	--	250	--	0.5	0.5	0.5	2
MW3	01/13/93	122.73	5.73	117.00	--	--	--	--	--	--	--	--
MW3	02/23/93	122.73	9.39	113.34	--	--	--	--	--	--	--	--
MW3	03/17/93	122.73	8.82	113.91	790	--	2,300	--	380	130	48	130

TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA

Redwood Oil Facility 114
1855 Guerneville Road
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Well ID	Sample Date	TOC (fmsl)	DTW (fbgs)	GW Elev. (fmsl)	TPHd ($\mu\text{g/L}$)	TPH Diesel-range ($\mu\text{g/L}$)	TPHg ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	B ($\mu\text{g/L}$)	T ($\mu\text{g/L}$)	E ($\mu\text{g/L}$)	X ($\mu\text{g/L}$)
MW3	04/16/93	122.73	7.64	115.09	—	—	—	—	—	—	—	—
MW3	05/14/93	122.73	7.57	115.16	—	—	—	—	—	—	—	—
MW3	09/30/93	122.73	14.10	108.63	2,300	—	14,000	—	1,900	450	500	1,000
MW3	03/22/94	122.72	5.80	116.92	1,100	—	200	—	7.4	7.9	5	20
MW3	09/22/94	122.72	—	—	—	—	—	—	—	—	—	—
MW3	03/27/95	122.72	—	—	—	—	—	—	—	—	—	—
MW3	08/30/95	122.72	—	—	—	—	—	—	41	24	25	66
MW3	03/19/96	122.72	8.91	113.81	<50	—	920	—	710	500	380	1,200
MW3	09/16/96	122.72	17.26	105.46	<100	—	9,500	—	17	4.1	6.4	42
MW3	03/24/97	122.72	13.85	108.87	410	—	1,300	—	140	44	69	160
MW3	09/29/97	122.72	13.63	109.09	<50	—	1,900	—	0.5	0.5	0.5	0.82
MW3	04/30/98	122.72	5.22	117.50	<50	—	<50	—	320	450	540	1,600
MW3	07/30/98	122.72	9.29	113.43	2,100	—	16,000	32	7	6	0.5	2
MW3	10/27/98	122.72	19.27	103.45	500	—	1,000	—	0.5	0.5	0.5	0.5
MW3	01/27/99	122.72	8.72	114.00	<50	—	<50	5	18	2.1	1.4	2.6
MW3	04/21/99	122.72	10.97	111.75	<50	—	920	19	50	30	38	110
MW3	07/29/99	122.72	12.03	110.69	2608	—	2,200	5	65	36	80	210
MW3	10/28/99	122.72	11.04	111.68	4908	—	<50	<0.5	<0.5	<0.5	<0.5	<0.5
MW3	02/04/00	122.72	5.12	117.60	<50	—	220	8.1	0.96	0.72	1.6	2.4
MW3	04/27/00	122.72	4.90	117.82	<50	—	160	6.7	16	2.7	4.2	2.9
MW3	07/25/00	122.72	9.62	113.10	110	—	2,100	12	86	6.3	31	9.8
MW3	10/26/00	122.72	10.61	112.11	<50	—	440	7.1	46	3.6	14	6.1
MW3	01/17/01	122.72	9.64	113.08	340	—	93	<5.0	0.66	<0.5	<0.5	<0.5
MW3	04/24/01	122.72	5.46	117.26	61	—	460	15	12	1.9	5.9	4.5
MW3	07/31/01	122.72	10.31	112.41	150	—	80	<5	0.89	0.52	0.5	4.4
MW3	12/05/01	123.26	23.00	100.26	120	—	230	<5	7.3	2.6	10	22.6
MW3	01/31/02	123.26	23.00	100.26	<50	—	1,500	11	31	11	11	132
MW3	04/17/02	123.26	21.10	102.16	260	—	1,400	32	53	100	49	245
MW3	07/10/02	123.26	11.45	111.81	160	—	—	—	—	—	—	—
MW3	10/10/02	123.26	—	—	—	—	—	—	—	—	—	—
MW3	01/13/03	123.26	3.05	120.21	—	—	—	—	—	—	—	—
MW3	03/14/03	123.26	11.80	111.46	57	—	<50	<1	<0.5	<0.5	<0.5	<1
MW3	04/16/03	123.26	11.30	111.96	<50	—	63	2	2	<1	1	4
MW3	07/16/03	123.26	11.15	112.11	190	—	120	10	5	<1	4	5
MW3	10/21/03	123.26	12.00	111.26	760	—	370	6	47	3	28	21
MW3	04/06/04	123.26	12.00	111.26	<50	—	120	0.5	1.3	0.7	2.4	6
MW3	12/31/04	123.26	4.91	118.35	<50	—	<50	<1	<0.5	<0.5	<0.5	<0.5
MW3	04/22/05	123.26	3.36	119.90	<50	—	46	<1	<0.5	<0.5	<0.5	3.2
MW3	08/24/05	123.26	9.01	114.25	<50	370	940c	<1.0	1.6	0.74	2.2	3.2
MW3	03/08/06	123.26	4.35	118.91	<50	—	<50	<0.50	<0.50	<0.50	<0.50	<0.50
MW4	03/22/94	122.64	6.45	116.19	1,500	—	5,900	—	150	110	130	420
MW4	09/22/94	122.64	11.54	111.10	70	—	4,600	—	360	130	220	370

TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA

Redwood Oil Facility 114
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TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Redwood Oil Facility 114
 1855 Guerneville Road
 Santa Rosa, California
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Well ID	Sample Date	TOC (fmsl)	DTW (fbgs)	GW Elev. (fmsl)	TPHd ($\mu\text{g/L}$)	TPH Diesel-range ($\mu\text{g/L}$)	TPHg ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	B ($\mu\text{g/L}$)	T ($\mu\text{g/L}$)	E ($\mu\text{g/L}$)	X ($\mu\text{g/L}$)
MW5	10/21/92	122.14	—	—	—	—	—	—	—	—	—	—
MW5	11/16/92	122.14	—	—	—	—	—	—	<0.5	<0.5	<0.5	<0.5
MW5	12/16/92	122.14	10.19	111.95	<50	—	<50	—	—	—	—	—
MW5	01/13/93	122.14	4.74	117.40	—	—	—	—	—	—	—	—
MW5	02/23/93	122.14	10.93	111.21	—	—	—	—	<0.5	<0.5	<0.5	<0.5
MW5	03/17/93	122.14	6.85	115.29	690	—	<50	—	—	—	—	—
MW5	04/16/93	122.14	10.61	111.53	—	—	—	—	—	—	—	—
MW5	05/14/93	122.14	7.73	114.41	—	—	—	—	—	—	—	—
MW5	09/30/93	122.14	—	—	—	—	—	—	2.7	0.5	1	6.5
MW5	03/22/94	122.14	10.87	111.27	660	—	90	—	—	—	—	—
MW5	09/22/94	122.14	11.98	110.16	—	—	—	—	20	27	7.3	45
MW5	03/27/95	122.14	4.75	117.39	110	—	140	—	<0.5	<0.5	<0.5	<0.5
MW5	08/30/95	122.14	9.86	112.28	50	—	<50	—	22	24	10	44
MW5	03/19/96	122.14	10.21	111.93	<50	—	290	—	—	—	—	—
MW5	09/16/96	122.14	—	—	—	—	—	—	—	—	—	—
MW5	03/24/97	122.14	—	—	—	—	—	—	—	—	—	—
MW5	09/29/97	122.14	—	—	—	—	—	—	—	—	—	—
MW5	04/30/98	122.14	—	—	—	—	—	—	—	—	—	—
MW5	07/30/98	122.14	—	—	—	—	—	—	—	—	—	—
MW5	10/27/98	122.14	—	—	—	—	—	—	—	—	—	—
MW5	01/27/99	122.14	—	—	—	—	—	—	—	—	—	—
MW5	04/21/99	122.14	—	—	—	—	—	—	—	—	—	—
MW5	Well destroyed.											
MW6	03/30/92	122.86	7.38	115.48	14,000	—	69,000	—	11,000	19,000	1,400	16,000
MW6	04/23/92	122.86	7.63	115.23	—	—	—	—	—	—	—	—
MW6	05/18/92	122.86	8.62	114.24	—	—	—	—	—	—	—	—
MW6	06/16/92	122.86	9.97	112.89	<50	—	73,000	—	5,900	1,400	2,400	6,700
MW6	07/24/92	122.86	11.72	111.14	—	—	—	—	—	—	—	—
MW6	08/18/92	122.86	11.93	110.93	—	—	—	—	—	—	—	—
MW6	09/24/92	122.86	—	—	—	—	—	—	—	—	—	—
MW6	10/21/92	122.86	—	—	—	—	—	—	—	—	—	—
MW6	11/16/92	122.86	—	—	—	—	—	—	—	—	—	—
MW6	12/16/92	122.86	10.9	111.96	17,000	—	61,000	—	6,700	8,700	770	9,100
MW6	01/13/93	122.86	6.67	116.19	—	—	—	—	—	—	—	—
MW6	02/23/93	122.86	10.65	112.21	—	—	—	—	—	—	—	—
MW6	03/17/93	122.86	8.68	114.18	1,800	—	2,800	—	360	140	17	580
MW6	04/16/93	122.86	7.45	115.41	—	—	—	—	—	—	—	—
MW6	05/14/93	122.86	7.48	115.38	—	—	—	—	—	—	—	—
MW6	09/30/93	122.86	—	—	—	—	—	—	—	—	—	—
MW6	03/22/94	122.86	7.03	115.83	22,000	—	5,000	—	620	92	290	660
MW6	09/22/94	122.86	12.24	110.62	—	—	—	—	—	—	—	—
MW6	03/27/95	122.86	8.61	114.25	6,300	—	18,000	—	3,900	2,000	1,000	3,200

TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Redwood Oil Facility 114
 1855 Guerneville Road
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Well ID	Sample Date	TOC (fmsl)	DTW (fbgs)	GW Elev. (fmsl)	TPHd ($\mu\text{g/L}$)	TPH Diesel-range ($\mu\text{g/L}$)	TPHg ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	B ($\mu\text{g/L}$)	T ($\mu\text{g/L}$)	E ($\mu\text{g/L}$)	X ($\mu\text{g/L}$)
MW6	08/30/95	122.86	10.3	112.56	—	—	28,000	—	3,200	290	1,500	2,500
MW6	03/19/96	122.86	8.21	114.65	<100	—	20,000	—	3,600	780	1,300	2,500
MW6	09/16/96	122.86	—	—	—	—	—	—	—	—	—	—
MW6	03/24/97	122.86	—	—	—	—	—	—	—	—	—	—
MW6	09/29/97	122.86	—	—	—	—	—	—	—	—	—	—
MW6	04/30/98	122.86	—	—	—	—	—	—	—	—	—	—
MW6	07/30/98	122.86	—	—	—	—	—	—	—	—	—	—
MW6	10/27/98	122.86	—	—	—	—	—	—	—	—	—	—
MW6	01/27/99	122.86	—	—	—	—	—	—	—	—	—	—
MW6	04/21/99	122.86	8.38	114.48	1908	—	3,600	5	300	41	150	150
MW6	07/29/99	122.86	—	—	—	—	—	—	—	—	—	—
MW6	04/27/00	122.86	7.51	115.35	<50	—	1,400	18	71	15	21	13
MW6	Well destroyed.											
MW7	03/30/92	123.53	5.53	118.00	5,040	—	86,000	—	20,000	22,000	3,200	14,000
MW7	04/23/92	123.53	6.57	116.96	—	—	—	—	—	—	—	—
MW7	05/18/92	123.53	7.66	115.87	—	—	—	—	—	—	—	—
MW7	06/16/92	123.53	—	—	—	—	—	—	—	—	—	—
MW7	06/22/92	123.53	—	—	<50	—	310,000	—	24,000	30,000	7,000	30,000
MW7	07/24/92	123.53	12.03	111.50	—	—	—	—	—	—	—	—
MW7	08/18/92	123.53	12.14	111.39	—	—	—	—	—	—	—	—
MW7	09/24/92	123.53	12.83	110.70	32,000	—	110,000	—	23,000	27,000	3,300	16,000
MW7	10/21/92	123.53	12.63	110.90	—	—	—	—	—	—	—	—
MW7	11/16/92	123.53	12.71	110.82	—	—	—	—	—	—	—	—
MW7	12/16/92	123.53	7.75	115.78	11,000	—	67,000	—	12,000	15,000	1,100	7,800
MW7	01/13/93	123.53	5.40	118.13	—	—	—	—	—	—	—	—
MW7	02/23/93	123.53	10.81	112.72	—	—	—	—	—	—	—	—
MW7	03/17/93	123.53	7.67	115.86	12,000	—	48,000	—	10,000	14,000	1,400	7,800
MW7	04/16/93	123.53	6.35	117.18	—	—	—	—	—	—	—	—
MW7	05/14/93	123.53	8.38	115.15	—	—	—	—	—	—	—	—
MW7	09/30/93	123.53	13.45	110.08	14,000	—	74,000	—	7,600	11,000	1,400	7,700
MW7	03/22/94	123.50	6.20	117.30	27,000	—	63,000	—	7,600	12,000	1,100	8,300
MW7	09/22/94	123.50	13.70	109.80	1,100	—	76,000	—	11,000	13,000	1,500	8,900
MW7	03/27/95	123.50	3.87	119.63	—	—	—	—	—	—	—	—
MW7	08/30/95	123.50	9.14	114.36	5,400	—	100,000	—	16,000	4,800	2,600	13,000
MW7	03/19/96	123.50	6.19	117.31	<250	—	64,000	—	9,000	9,800	1,600	8,300
MW7	09/16/96	123.50	13.83	109.67	<500	—	50,000	—	5,500	6,800	1,600	7,100
MW7	03/24/97	123.50	13.50	110.00	4,600	—	68,000	—	5,800	9,600	2,700	11,000
MW7	09/29/97	123.50	13.42	110.08	3,600	—	21,000	—	1,700	1,900	910	3,800
MW7	04/30/98	123.50	7.60	115.90	290	—	16,000	—	1,300	1,300	630	2,000
MW7	07/30/98	123.50	13.07	110.43	660	—	18,000	20	310	560	530	3,100
MW7	10/27/98	123.50	13.98	109.52	4	—	11,000	54	780	460	310	1,500
MW7	01/27/99	123.50	13.58	109.92	<50	—	32,000	360	1,500	1,900	1,100	3,700

TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Redwood Oil Facility 114
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 Santa Rosa, California
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Well ID	Sample Date	TOC (fmsl)	DTW (fbgs)	GW Elev. (fmsl)	TPHd (µg/L)	TPH Diesel-range (µg/L)	TPHg (µg/L)	MTBE (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
MW7	04/21/99	123.50	5.65	117.85	510	--	15,000	130	800	510	410	810
MW7	07/29/99	123.50	10.85	112.65	1,900	--	7,000	150	330	120	330	1,500
MW7	10/28/99	123.50	13.68	109.82	1,300	--	11,000	5	300	32	630	2,800
MW7	02/04/00	123.50	13.56	109.94	<50	--	25,000	980	980	1,300	710	2,800
MW7	04/27/00	123.50	9.56	113.94	490	--	3,000	1,100	110	32	170	290
MW7	07/25/00	123.50	--	--	--	--	--	--	--	--	--	--
MW7	10/26/00	123.50	10.60	112.90	<50	--	1,100	0.5	34	19	21	74
MW7	01/17/01	123.50	10.14	113.36	1,100	--	600	5	5.1	2.2	12	17
MW7	04/24/01	123.50	13.26	110.24	5,300	--	10,000	<250	580	990	610	2,100
MW7	07/31/01	123.50	11.77	111.73	390	--	750	16	16	8.6	24	38
MW7	12/05/01	124.46	27.00	97.46	150	--	610	33	81	46	18	82
MW7	01/31/02	124.46	27.00	97.46	260	--	1,400	22	72	43	5.5	191
MW7	04/17/02	124.46	25.80	98.66	460	--	1,500	29	37	67	12	320
MW7	07/10/02	124.46	25.85	98.61	340	--	1,700	36	55	130	60	292
MW7	10/10/02	124.46	25.80	98.66	380	--	670	21	4.8	6.4	1.1	20
MW7	01/13/03	124.46	7.91	116.55	1,900	--	9,800	14	360	230	470	1,500
MW7	03/14/03	124.46	25.80	98.66	--	--	--	--	--	--	--	--
MW7	04/16/03	124.46	25.80	98.66	<50	--	<50	14	<1	<1	<1	<1
MW7	07/16/03	124.46	25.80	98.66	110	--	<50	15	1	<1	<1	<1
MW7	10/21/03	124.46	25.80	98.66	<50	--	<50	2	<1	<1	<1	<1
MW7	04/06/04	124.46	25.80	98.66	1,700	--	3,700	7.2	150	82	200	437
MW7	12/31/04	124.46	8.17	116.29	<50	--	3,200	<2	150	66	120	210
MW7	04/22/05	124.46	7.36	117.10	<50	--	8,700	14	170	110	360	340
MW7	08/24/05	124.46	12.38	112.08	<50	440	2,300c	<30	98	<20	92	23
MW7	03/08/06	124.46	5.07	119.39	<400	--	4,300	5.9	130	49	240	150
MW8	03/30/92	124.10	6.00	118.10	9,090	--	22,000	--	860	3,200	580	4,000
MW8	04/23/92	124.10	6.89	117.21	--	--	--	--	--	--	--	--
MW8	05/18/92	124.10	9.00	115.10	--	--	--	--	--	--	--	--
MW8	06/16/92	124.10	11.71	112.39	<50	--	83,000	--	10,000	16,000	1,900	8,500
MW8	07/24/92	124.10	14.51	109.59	--	--	--	--	--	--	--	--
MW8	08/18/92	124.10	14.65	109.45	--	--	--	--	--	--	--	--
MW8	09/24/92	124.10	15.58	108.52	--	--	--	--	--	--	--	--
MW8	10/21/92	124.10	15.43	108.67	--	--	--	--	--	--	--	--
MW8	11/16/92	124.10	5.46	118.64	--	--	--	--	--	--	--	--
MW8	12/16/92	124.10	7.73	116.37	--	--	--	--	--	--	--	--
MW8	01/13/93	124.10	5.30	118.80	--	--	--	--	--	--	--	--
MW8	02/23/93	124.10	10.31	113.79	--	--	--	--	--	--	--	--
MW8	03/17/93	124.10	7.67	116.43	--	--	--	--	--	--	--	--
MW8	04/16/93	124.10	6.56	117.54	--	--	--	--	--	--	--	--
MW8	05/14/93	124.10	8.13	115.97	--	--	--	--	--	--	--	--
MW8	09/30/93	124.10	15.10	109.00	35,000	--	110,000	--	12,000	34,000	4,000	22,000
MW8	03/22/94	123.95	5.10	118.85	460,000	--	69,000	--	1,400	12,000	2,800	15,000

TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Redwood Oil Facility 114
1855 Guerneville Road
Santa Rosa, California
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Well ID	Sample Date	TOC (fmsl)	DTW (fbgs)	GW Elev. (fmsl)	TPHd ($\mu\text{g/L}$)	TPH Diesel-range ($\mu\text{g/L}$)	TPHg ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	B ($\mu\text{g/L}$)	T ($\mu\text{g/L}$)	E ($\mu\text{g/L}$)	X ($\mu\text{g/L}$)
MW8	09/22/94	123.95	13.86	110.09	4,600	—	66,000	—	2,300	8,400	1,900	10,000
MW8	03/27/95	123.95	3.25	120.70	—	—	—	—	—	—	—	—
MW8	08/30/95	123.95	11.05	112.90	—	—	—	—	—	—	—	—
MW8	03/19/96	123.95	4.08	119.87	<50	—	5,800	—	5.3	130	91	480
MW8	09/16/96	123.95	14.49	109.46	<500	—	18,000	—	110	810	320	2,900
MW8	03/24/97	123.95	5.58	118.37	8,600	—	20,000	—	40	45	67	170
MW8	09/29/97	123.95	13.29	110.66	640	—	1,200	—	19	1.1	2.2	5.6
MW8	04/30/98	123.95	5.55	118.40	<50	—	260	—	0.87	0.5	1.1	1.9
MW8	07/30/98	123.95	10.42	113.53	250	—	6,100	<5.0	33	150	100	410
MW8	10/27/98	123.95	15.41	108.54	59	—	6,900	2	9	20	42	240
MW8	01/27/99	123.95	5.42	118.53	<50	—	600	<5.0	<0.5	1.4	1.3	8.9
MW8	04/21/99	123.95	7.70	116.25	100	—	2,100	7.7	4.3	0.76	4.1	37
MW8	07/29/99	123.95	11.01	112.94	1,300	—	9,800	88	24	60	130	630
MW8	10/28/99	123.95	16.98	106.97	—	—	24,000	<50	<50	310	330	1,500
MW8	02/04/00	123.95	10.78	113.17	160,000	—	2,200,000	<500	<500	7,200	9,600	82,000
MW8	03/09/00	123.95	—	—	3,300	—	9,600	90	27	200	140	690
MW8	03/09/00	123.95	—	—	3,100	—	12,000	260	<50	260	150	800
MW8	04/27/00	123.95	14.82	109.13	12,000	—	47,000	240	130	760	590	2,100
MW8	07/25/00	123.95	12.50	111.45	2,200	—	16,000	<10	55	29	68	210
MW8	10/26/00	123.95	—	—	530,000	—	110,000	<550	<550	<550	900	3,400
MW8	01/17/01	123.95	15.57	108.38	83,000	—	1,400	<50	52	55	24	150
MW8	04/24/01	123.95	8.10	115.85	55,000	—	43,000	<500	<50	300	450	3,100
MW8	07/31/01	123.95	14.31	109.64	7,000	—	11,000	<250	93	100	69	210
MW8	12/05/01	124.07	27.00	97.07	81	—	380	<5	3	5.1	2.1	28
MW8	01/31/02	124.07	27.00	97.07	<50	—	<50	<5	<0.5	<0.5	<0.5	<0.5
MW8	04/17/02	124.07	20.05	104.02	1,000	—	3,100	<1	30	5	1	207
MW8	07/10/02	124.07	25.82	98.25	1,100	—	3,200	2	340	52	13	450
MW8	10/10/02	124.07	25.80	98.27	2,000	—	11,000	<25	550	220	130	370
MW8	01/13/03	124.07	3.60	120.47	880	—	150	<1	<0.5	<0.5	<0.5	4.6
MW8	03/14/03	124.07	25.80	98.27	—	—	—	—	—	—	—	—
MW8	04/16/03	124.07	7.61	116.46	7,400	—	1,300	<1	41	22	6	86
MW8	07/16/03	124.07	25.80	98.27	32,000	—	750	3	26	24	8	91
MW8	10/21/03	124.07	25.80	98.27	1,600	—	4,600	<1	8	59	8	470
MW8	04/06/04	124.07	25.80	98.27	<50	—	61	<0.5	<0.5	<0.5	<0.5	1.4
MW8	12/31/04	124.07	3.70	120.37	<50	—	<50	<1	<0.5	<0.5	<0.5	<0.5
MW8	04/22/05	124.07	4.11	119.96	<50	—	<25	<1	<0.5	<0.5	<0.5	<0.5
MW8	08/24/05	124.07	7.92	116.15	<50	—	1,100c	<1.0	<0.50	<0.50	1.2	2.3
MW8	03/08/06	124.07	2.79	121.28	<50	—	<50	<0.50	<0.50	<0.50	<0.50	<0.50
MW9	03/22/94	122.57	5.74	116.83	150,000	—	47,000	—	810	2,800	900	11,000
MW9	09/22/94	122.57	8.40	114.17	4,100	—	52,000	—	900	1,300	1,600	7,700
MW9	03/27/95	122.57	5.15	117.42	—	—	—	—	—	—	—	—
MW9	08/30/95	122.57	7.20	115.37	5,500	—	19,000	—	380	220	520	2,100

TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Redwood Oil Facility 114
1855 Guerneville Road
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Well ID	Sample Date	TOC (fmsl)	DTW (fbgs)	GW Elev. (fmsl)	TPHd (µg/L)	TPH Diesel-range (µg/L)	TPHg (µg/L)	MTBE (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
MW9	03/19/96	122.57	5.43	117.14	5,000	—	9,000	—	150	140	170	670
MW9	09/16/96	122.57	12.98	109.59	2,000	—	6,500	—	560	720	220	1,100
MW9	03/24/97	122.57	6.42	116.15	290	—	250	—	7.6	1.3	2.5	12
MW9	09/29/97	122.57	12.53	110.04	1,200	—	2,700	—	170	60	1.5	520
MW9	04/30/98	122.57	5.17	117.40	<50	—	350	—	11	<0.5	7.7	22
MW9	07/30/98	122.57	7.01	115.56	360	—	<500	<5	21	<5	<5	6.8
MW9	10/27/98	122.57	8.80	113.77	<50	—	330	2	<0.5	<0.5	<0.5	<1
MW9	01/27/99	122.57	6.06	116.51	<50	—	100	7.7	8.9	<0.5	1.1	0.5
MW9	04/21/99	122.57	5.97	116.60	<50	—	<50	6.6	3.2	<0.5	<0.5	1.1
MW9	07/29/99	122.57	6.24	116.33	538	—	120	<5	0.9	0.8	0.8	1.6
MW9	10/28/99	122.57	11.50	111.07	<50	—	78	<0.5	<0.5	1	<0.5	1.7
MW9	02/04/00	122.57	6.10	116.47	<50	—	200	<0.5	8.5	2.8	<0.5	3.2
MW9	04/27/00	122.57	5.12	117.45	<50	—	110	11	3.6	1.2	<0.5	<0.5
MW9	07/25/00	122.57	6.67	115.90	180	—	900	3.1	15	1.9	13	19
MW9	10/26/00	122.57	6.56	116.01	<50	—	510	<0.5	8.2	0.8	1.5	0.6
MW9	01/17/01	122.57	9.11	113.46	2,100	—	290	<5	5.4	3.8	1.6	8.8
MW9	04/24/01	122.57	6.31	116.26	200	—	160	<5	9.6	0.78	2.2	1.6
MW9	07/31/01	122.57	10.95	111.62	100	—	160	5	1.9	0.9	<0.5	3.3
MW9	12/05/01	123.60	5.21	118.39	570	—	570	<5	72	6.5	9.2	17
MW9	01/31/02	123.60	8.50	115.10	520	—	820	<5	<5	<5	<5	<5
MW9	04/17/02	123.60	12.51	111.09	54	—	290	1	46	67	6	25
MW9	07/10/02	123.60	13.55	110.05	350	—	220	<1	6	5	2	6
MW9	10/10/02	123.60	14.11	109.49	1,200	—	3,100	<10	<25	<25	98	280
MW9	01/13/03	123.60	4.32	119.28	470	—	580	<2	27	5.3	3.2	9.2
MW9	03/14/03	123.60	8.05	115.55	—	—	87	<1	7	<1	<1	1
MW9	04/16/03	123.60	7.21	116.39	93	—	430	7	<1	<1	<1	4
MW9	07/16/03	123.60	9.07	114.53	450	—	140	2	<1	<1	<1	1
MW9	10/21/03	123.60	12.88	110.72	76	—	99	1.1	5.4	4.9	1.2	15.6
MW9	04/06/04	123.60	6.82	116.78	51	—	14,000	<10	320	560	420	1,500
MW9	12/31/04	123.60	4.88	118.72	<50	—	16,000	<20	190	600	470	1,700
MW9	04/22/05	123.60	5.54	118.06	3,900a	—	6,500c	<20	29	89	85	270
MW9	08/24/05	123.60	7.97	115.63	<50	940	<50	<0.5	13	26	110	170
MW9	03/08/06	123.60	4.56	119.04	<600	—	3,300	<0.50	—	—	—	—
MW10	11/11/99	122.52	15.03	107.49	<50	—	<50	<5.0	<0.5	<0.5	<0.5	<0.5
MW10	02/04/00	122.52	11.30	111.22	<50	—	<50	<0.5	<0.5	<0.5	<0.5	<0.5
MW10	04/27/00	122.52	11.98	110.54	<50	—	<50	7.4	<0.5	<0.5	<0.5	<0.5
MW10	07/25/00	122.52	14.60	107.92	120	—	<50	<2	<0.5	<0.5	<0.5	<0.5
MW10	10/26/00	122.52	15.83	106.69	<50	—	<50	<0.5	<0.5	<0.5	<0.5	<0.5
MW10	01/17/01	122.52	13.00	109.52	<50	—	<50	<5.0	<0.5	<0.5	<0.5	<0.5
MW10	04/24/01	122.52	—	—	—	—	—	—	—	—	—	—
MW10	08/06/01	122.52	16.21	106.31	<50	—	<50	<5.0	<0.5	<0.5	<0.5	<0.5
MW10	12/05/01	123.85	9.40	114.45	150	—	<50	<5	<0.5	<0.5	<0.5	<0.5

TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA

Redwood Oil Facility 114
1855 Guerneville Road
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TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA

Redwood Oil Facility 114
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TABLE 1A
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Redwood Oil Facility 114
 1855 Guerneville Road
 Santa Rosa, California
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Well ID	Sample Date	TOC (fmsl)	DTW (fbgs)	GW Elev. (fmsl)	TPHd ($\mu\text{g/L}$)	TPH Diesel-range ($\mu\text{g/L}$)	TPHg ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	B ($\mu\text{g/L}$)	T ($\mu\text{g/L}$)	E ($\mu\text{g/L}$)	X ($\mu\text{g/L}$)
V4	04/16/03	124.81	7.14	117.67	—	—	—	—	—	—	—	—
V4	07/16/03	124.81	8.11	116.70	—	—	—	—	—	—	—	—
V4	10/21/03	124.81	10.11	114.70	—	—	—	—	—	—	—	—
V4	04/06/04	124.81	7.16	117.65	—	—	—	—	—	—	—	—
V4	12/31/04	124.81	6.26	118.55	—	—	—	—	—	—	—	—
V4	04/22/05	124.81	6.66	118.15	—	—	—	—	—	—	—	—
V4	08/24/05	124.81	7.86	116.95	—	—	—	—	—	—	—	—
V4	03/08/06	124.81	5.98	118.83	—	—	—	—	—	—	—	—
			2.79									
			27.00									

Notes:

Data collected prior to April, 2004 compiled from the ECM Group Systems Operations Report dated July 9, 2004.

- TOC = Top of well casing elevation; datum is mean sea level.
- DTW = Depth to water.
- GW Elev. = Groundwater elevation; datum is mean sea level.
- TPHd = Total petroleum hydrocarbons as diesel analyzed using EPA Method 8015M.
- TPHg = Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8015M.
- TPH-diesel Range = Concentration of hydrocarbons within diesel range, but reported by laboratory as not representative of diesel fuel; probably representative of aged gasoline; by EPA Method 8015M.
- MTBE = Methyl tertiary butyl ether analyzed using EPA Method 8260B. Prior to 12/31/04 analyzed using EPA Method 8021B.
- BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8021B.
- ETBE = Ethyl tertiary butyl ether analyzed using EPA Method 8260B.
- TBA = Tertiary butyl alcohol analyzed using EPA Method 8260B.
- DIPE = Di-isopropyl ether analyzed using EPA Method 8260B.
- TAME = Tertiary amyl methyl ether analyzed using EPA Method 8260B.
- 1,2-DCA = 1,2-Dichloroethane analyzed using EPA Method 8260B.
- EDB = 1,2-Dibromoethane analyzed using EPA Method 8260B.
- Ethanol = Ethanol analyzed using EPA Method 8260B.
- Methanol = Methanol analyzed using EPA Method 8015.
- fbgs = Feet below ground surface.
- $\mu\text{g/L}$ = Micrograms per liter.
- mg/L = Milligrams per liter.
- = Not measured/Not sampled/Not analyzed.
- < = Analytes not detected at or above the laboratory reporting limit.
- a = Hydrocarbons reported as diesel do not exhibit a typical diesel chromatographic pattern.
- b = Quantified as diesel-range hydrocarbons consisting of aged gasoline with an unresolved C8-C26 range.
- c = Analyzed using GC-MS.

TABLE 1B
ADDITIONAL CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Redwood Oil Facility 114
1855 Guerneville Road
Santa Rosa, California
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Well ID	Sample Date	ETBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Ethanol (µg/L)	Methanol (mg/L)
MW1	12/31/04	<5	<10	<5	<5	<0.5	<0.5	<100	---
MW1	04/22/05	<5	<10	<5	<5	<0.5	<0.5	<100	<0.5
MW1	08/24/05	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
MW1	03/08/06	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<0.050
MW2	12/31/04	<5	<10	<5	<5	<0.5	<0.5	<100	---
MW2	04/22/05	<25	<50	<25	<25	<2.5	<2.5	<500	<0.5
MW2	08/24/05	<25	<50	<25	<25	<2.5	<2.5	<500	<0.50
MW2	03/08/06	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<0.050
MW3	12/31/04	<5	<10	<5	<5	<0.5	<0.5	<100	---
MW3	04/22/05	<5	<10	<5	<5	<0.5	<0.5	<100	<0.5
MW3	08/24/05	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
MW3	03/08/06	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<0.050
MW4	12/31/04	<5	<10	<5	<5	<0.5	<0.5	<100	---
MW4	04/22/05	<5	<10	<5	<5	<0.5	<0.5	<100	<0.5
MW4	08/24/05	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
MW4	03/08/06	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<0.050
MW7	12/31/04	<10	<20	<10	<10	<1	<1	<200	---
MW7	04/22/05	<50	<100	<50	<50	<5	<5	<1,000	<0.5
MW7	08/24/05	<20	<300	<20	<20	<20	<20	<4,000	<0.50
MW7	03/08/06	<0.50	16	<0.50	<0.50	<0.50	<0.50	<5.0	<0.050
MW8	12/31/04	<5	<10	<5	<5	<0.5	<0.5	<100	---
MW8	04/22/05	<5	<10	<5	<5	<0.5	<0.5	<100	<0.5
MW8	08/24/05	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
MW8	03/08/06	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<0.050
MW9	12/31/04	<50	<100	<50	<50	<5	<5	<1,000	---
MW9	04/22/05	<100	<200	<100	<100	<10	<10	<2,000	<0.5
MW9	08/24/05	<100	<200	<100	<100	<10	<10	<2,000	<0.50
MW9	03/08/06	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<0.050
MW10	12/31/04	<5	<10	<5	<5	<0.5	<0.5	<100	---
MW10	04/22/05	<5	<10	<5	<5	<0.5	<0.5	<100	<0.5
MW10	08/24/05	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
MW10	03/08/06	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<0.050

TABLE 1B
ADDITIONAL CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Redwood Oil Facility 114
 1855 Guerneville Road
 Santa Rosa, California
 (Page 2 of 2)

Well ID	Sample Date	ETBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Ethanol (µg/L)	Methanol (mg/L)
MW11	12/31/04	<5	<10	<5	<5	<0.5	<0.5	<100	---
MW11	04/22/05	<5	<10	<5	<5	<0.5	<0.5	<100	<0.5
MW11	08/24/05	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
MW11	03/08/06	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<0.050

Notes:

Data collected prior to April, 2004 compiled from the ECM Group Systems Operations Report dated July 9, 2004.

TOC	=	Top of well casing elevation; datum is mean sea level.
DTW	=	Depth to water.
GW Elev.	=	Groundwater elevation; datum is mean sea level.
TPHd	=	Total petroleum hydrocarbons as diesel analyzed using EPA Method 8015M.
TPHg	=	Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8015M.
MTBE	=	Methyl tertiary butyl ether analyzed using EPA Method 8021B.
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8021B.
ETBE	=	Ethyl tertiary butyl ether analyzed using EPA Method 8260B.
TBA	=	Tertiary butyl alcohol analyzed using EPA Method 8260B.
DIPE	=	Di-isopropyl ether analyzed using EPA Method 8260B.
TAME	=	Tertiary amyl methyl ether analyzed using EPA Method 8260B.
1,2-DCA	=	1,2-Dichloroethane analyzed using EPA Method 8260B.
EDB	=	1,2-Dibromoethane analyzed using EPA Method 8260B.
Ethanol	=	Ethanol analyzed using EPA Method 8260B.
Methanol	=	Methanol analyzed using EPA Method 8015.
fbgs	=	Feet below ground surface.
µg/L	=	Micrograms per liter.
mg/L	=	Milligrams per liter.
---	=	Not measured/Not sampled/Not analyzed.
<	=	Analytes not detected at or above the laboratory reporting limit.
a	=	Hydrocarbons reported as diesel do not exhibit a typical diesel chromatographic pattern.
b	=	Quantified as diesel-range hydrocarbons consisting of aged gasoline with an unresolved C8-C26 range.
c	=	Analyzed using GC-MS.

TABLE 2
CUMULATIVE MONITORING AND SAMPLING DATA FOR PRIVATE WATER WELL
AND WELL HEAD TREATMENT SYSTEM
 Redwood Oil Facility 114
 1855 Guerneville Road
 Santa Rosa, California
 (Page 1 of 4)

Well ID	Sample Date	Sample ID	TPHd ($\mu\text{g/L}$)	TPHg ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	B ($\mu\text{g/L}$)	T ($\mu\text{g/L}$)	E ($\mu\text{g/L}$)	X ($\mu\text{g/L}$)	ETBE ($\mu\text{g/L}$)	TBA ($\mu\text{g/L}$)	DIPE ($\mu\text{g/L}$)	TAME ($\mu\text{g/L}$)	1,2-DCA ($\mu\text{g/L}$)	EDB ($\mu\text{g/L}$)	Ethanol ($\mu\text{g/L}$)	Methanol (mg/L)	
DW1815	01/31/05	—	—	—	<1	—	—	—	—	<5	<10	<5	<5	—	—	<100	<0.5	
DW1815	02/25/05	—	—	—	<1	—	—	—	—	<5	<10	<5	<5	—	—	<100	<0.5	
DW1815	03/30/05	—	—	—	<1	—	—	—	—	<5	<10	<5	<5	—	—	<100	<0.5	
DW1815	04/22/05	—	—	—	<1	—	—	—	—	<5	<10	<5	<5	—	—	<100	<0.50	
DW1815	05/20/05	—	—	—	<1.0	—	—	—	—	<5.0	<10.0	<5.0	<5.0	—	—	<100	<0.50	
DW1815	06/17/05	—	—	—	1.3	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50	
DW1815	07/22/05 a	—	—	—	18.0	—	—	—	—	<5.0	<10	<5.0	<5.0	—	—	<100	0.84b	
DW1815	08/05/05	—	—	—	1.2	—	—	—	—	<5.0	<10	<5.0	<5.0	—	—	<100	<0.50b	
DW1815	09/23/05	—	—	—	1.1	—	—	—	—	<5.0	<10	<5.0	<5.0	—	—	<100	<0.50	
DW1815	October 2005 - Treatment system installed.																	
DW1815	10/19/05	W-INF	—	—	1.1	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50	
		W-INT	—	—	<1.0	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	0.83c	
		W-EFF	—	—	<1.0	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50	
DW1815	11/18/05	W-INF	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<5.0	<50	
		W-INT	54d	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<5.0	<50	
		W-EFF	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<5.0	<50	
DW1815	12/29/05	W-INF	<50	<25	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	—	—	—	
		W-INT	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	—	—	—	
		W-EFF	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	—	—	—	
DW1815	01/31/06	W-INF	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
		W-INT	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
		W-EFF	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
DW1815	02/27/06	W-INF	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
		W-INT	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
		W-EFF	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
DW1815	03/17/06	W-INF	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<0.50	<0.50	<0.50	<5.0	<0.050	
DW2050	04/21/99	—	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	08/11/99	—	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	10/28/99	—	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	02/04/00	—	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	05/01/00	—	<50	<50	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	07/25/00	—	<50	<50	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	10/26/00	—	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	01/17/01	—	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	04/24/01	—	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	07/31/01	—	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	12/05/01	—	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	01/31/02	—	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	04/17/02	—	<50	<50	2	<1	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	05/24/02	—	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—	
DW2050	07/10/02	—	<50	<50	4	<1	<1	<1	<1	<1	—	—	—	—	—	—	—	

TABLE 2
CUMULATIVE MONITORING AND SAMPLING DATA FOR PRIVATE WATER WELL
AND WELL HEAD TREATMENT SYSTEM
Redwood Oil Facility 114
1855 Guerneville Road
Santa Rosa, California
(Page 2 of 4)

Well ID	Sample Date	Sample ID	TPHd ($\mu\text{g/L}$)	TPHg ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	B ($\mu\text{g/L}$)	T ($\mu\text{g/L}$)	E ($\mu\text{g/L}$)	X ($\mu\text{g/L}$)	ETBE ($\mu\text{g/L}$)	TBA ($\mu\text{g/L}$)	DIPE ($\mu\text{g/L}$)	TAME ($\mu\text{g/L}$)	1,2-DCA ($\mu\text{g/L}$)	EDB ($\mu\text{g/L}$)	Ethanol ($\mu\text{g/L}$)	Methanol (mg/L)
DW2050	08/07/02	—	<50	<50	<5	<0.5	<0.5	<0.5	<1	—	—	—	—	—	—	—	
DW2050	10/10/02	—	<50	<50	5.7	<0.5	<0.5	<0.5	<1	—	—	—	—	—	—	—	
DW2050	01/13/03	—	<50	<50	4.4	<0.5	<0.5	<0.5	<1	—	—	—	—	—	—	—	
DW2050	04/16/03	—	<50	<50	4	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	07/16/03	—	<50	<50	9	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	10/21/03	—	<50	<50	11	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	04/06/04	—	<50	<50	6.4	<0.5	<0.5	<0.5	<1	—	—	—	—	—	—	—	
DW2050	12/31/04	—	<50	<50	27	<0.5	<0.5	<0.5	<0.5	<5	<10	<5	<5	<0.5	<0.5	<100	
DW2050	01/31/05	—	—	—	22	—	—	—	—	22	<5	<10	<10	<5	<100	<0.5	
DW2050	02/25/05	—	—	—	19	—	—	—	—	<5	<10	<5	<5	—	—	<100	
DW2050	03/30/05	—	—	—	15	—	—	—	—	<5	<10	<5	<5	—	—	<100	
DW2050	04/22/05	—	—	—	20	—	—	—	—	<5	<10	<5	<5	—	—	<100	
DW2050	05/20/05	—	—	—	7.6	—	—	—	—	<5.0	<10.0	<5.0	<5.0	—	—	<0.5	
DW2050	06/17/05	—	—	—	16	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	
DW2050	07/22/05 a	—	—	—	<1.0	—	—	—	—	<5.0	<10	<5.0	<5.0	—	—	<100	
DW2050	08/05/05	—	—	—	20	—	—	—	—	<5.0	<10	<5.0	<5.0	—	—	2.1b	
DW2050	09/23/05	—	—	—	26	—	—	—	—	<5.0	<10	<5.0	<5.0	—	—	<100	
DW2050	October 2005 - Treatment system installed.																
DW2050	10/19/05	W-INF	—	—	20.0	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	
		W-INT	—	—	<1.0	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	
		W-EFF	—	—	<1.0	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	
DW2050	11/18/05	W-INF	<50	<50	20	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<50	
		W-INT	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<50	
		W-EFF	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<50	
DW2050	12/29/05	W-INF	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	—	—	—	
		W-INT	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	—	—	—	
		W-EFF	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	—	—	—	
DW2050	01/27/06	W-INF	<50	<50	3.9	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	
		W-INT	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	
		W-EFF	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	
DW2050	02/27/06	W-INF	<50	<50	3.5	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	
		W-INT	—	—	<1.0	—	—	—	—	—	—	—	—	—	—	—	
		W-EFF	—	—	<1.0	—	—	—	—	—	—	—	—	—	—	—	
DW2050	03/08/06	W-INF	<50	<50	2.4	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	
		W-INT	—	—	<0.50	—	—	—	—	—	—	—	—	—	—	—	
		W-EFF	—	—	<0.50	—	—	—	—	—	—	—	—	—	—	—	
DW2075	07/24/01	—	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	
DW2075	12/05/01	—	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	
DW2075	01/31/02	—	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	
DW2075	04/17/02	—	<50	<50	<1	<1	<1	<1	<1	<1	—	—	—	—	—	—	
DW2075	07/10/02	—	<50	<50	<1	<1	<1	<1	<1	<1	—	—	—	—	—	—	
DW2075	10/10/02	—	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	<1	—	—	—	—	—	—	
DW2075	01/13/03	—	<50	<50	<1	<0.5	<0.5	<0.5	<0.5	<1	—	—	—	—	—	—	
DW2075	04/16/03	—	<50	<50	<1	<1	<1	<1	<1	<1	—	—	—	—	—	—	

TABLE 2
CUMULATIVE MONITORING AND SAMPLING DATA FOR PRIVATE WATER WELL
AND WELL HEAD TREATMENT SYSTEM

TABLE 2
CUMULATIVE MONITORING AND SAMPLING DATA FOR PRIVATE WATER WELL
AND WELL HEAD TREATMENT SYSTEM
 Redwood Oil Facility 114
 1855 Guerneville Road
 Santa Rosa, California
 (Page 4 of 4)

Well ID	Sample Date	Sample ID	TPHd (µg/L)	TPHg (µg/L)	MTBE (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	ETBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Ethanol (µg/L)	Methanol (mg/L)
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Notes:

Data collected prior to April, 2004 compiled from the ECM Group Systems Operations Report dated July 9, 2004.

- TPHd = Total petroleum hydrocarbons as diesel analyzed using EPA Method 8015M.
- TPHg = Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8260B. Prior to 10/19/05, analyzed using EPA Method 8015M.
- MTBE = Methyl tertiary butyl ether analyzed using EPA Method 8260B. Prior to 12/31/04 analyzed using EPA Method 8021B.
- BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8260B. Prior to 10/19/05, analyzed using EPA Method 8021B.
- ETBE = Ethyl tertiary butyl ether analyzed using EPA Method 8260B.
- TBA = Tertiary butyl alcohol analyzed using EPA Method 8260B.
- DIPE = Di-isopropyl ether analyzed using EPA Method 8260B.
- TAME = Tertiary amyl methyl ether analyzed using EPA Method 8260B.
- 1,2-DCA = 1,2-Dichloroethane analyzed using EPA Method 8260B.
- EDB = 1,2-Dibromoethane analyzed using EPA Method 8260B.
- Ethanol = Ethanol analyzed using EPA Method 8260B.
- Methanol = Methanol analyzed using EPA Method 8015.
- µg/L = Micrograms per liter.
- mg/L = Milligrams per liter.
- = Not measured/Not sampled/Not analyzed.
- < = Analytes not detected at or above the laboratory reporting limit.
- a = Results not consistent with historical trend; samples for DW1815, DW2050, and DW2075 likely mislabeled in field.
- b = Methanol results updated on 10/10/05.
- c = Methanol detection in intermediate port sample likely due to laboratory contamination.
- d = Hydrocarbons reported as TPH as diesel do not exhibit a typical diesel chromatographic pattern.

TABLE 3
LABORATORY ANALYSIS RESULTS OF GRAB GROUNDWATER SAMPLES
Redwood Oil Facility 114
1855 Guerneville Road
Santa Rosa, California
(Page 1 of 1)

Sample ID #	Sampling Date	Sample Depth	TPHd	TPHg	MTBE	B	T	E	X	DIPE	ETBE	TAME	TBA	Methanol	Ethanol
W-54-CPT4	06/22/05	54	110	<50	0.94	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-68-CPT4	06/22/05	68	<50	59	1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-76-CPT4	06/22/05	76	60	<50	23	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-84-CPT4	06/22/05	84	<50	<50	32	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-120-CPT4	06/22/05	120	350/<50a,b	310	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-54-CPT5	06/23/05	54	70/<50a,b	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-64-CPT5	06/23/05	64	63	<50	1.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-81-CPT5	06/23/05	81	59	<50	7.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-111-CPT5	06/23/05	111	240c/<50a,b	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-33-CPT6	06/21/05	33	77	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-56-CPT6	06/21/05	56	130	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-70-CPT6	06/21/05	70	66	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-80-CPT6	06/21/05	80	<50	<50	55	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-118-CPT6	06/21/05	118	53	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-22-CPT7	06/20/05	22	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-50-CPT7	06/20/05	50	98/<50a,b	<50/<100d	1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-56-CPT7	06/20/05	56	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-80-CPT7	06/20/05	80	<50	<50	20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0
W-98-CPT7	06/20/05	98	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<5.0

Notes:

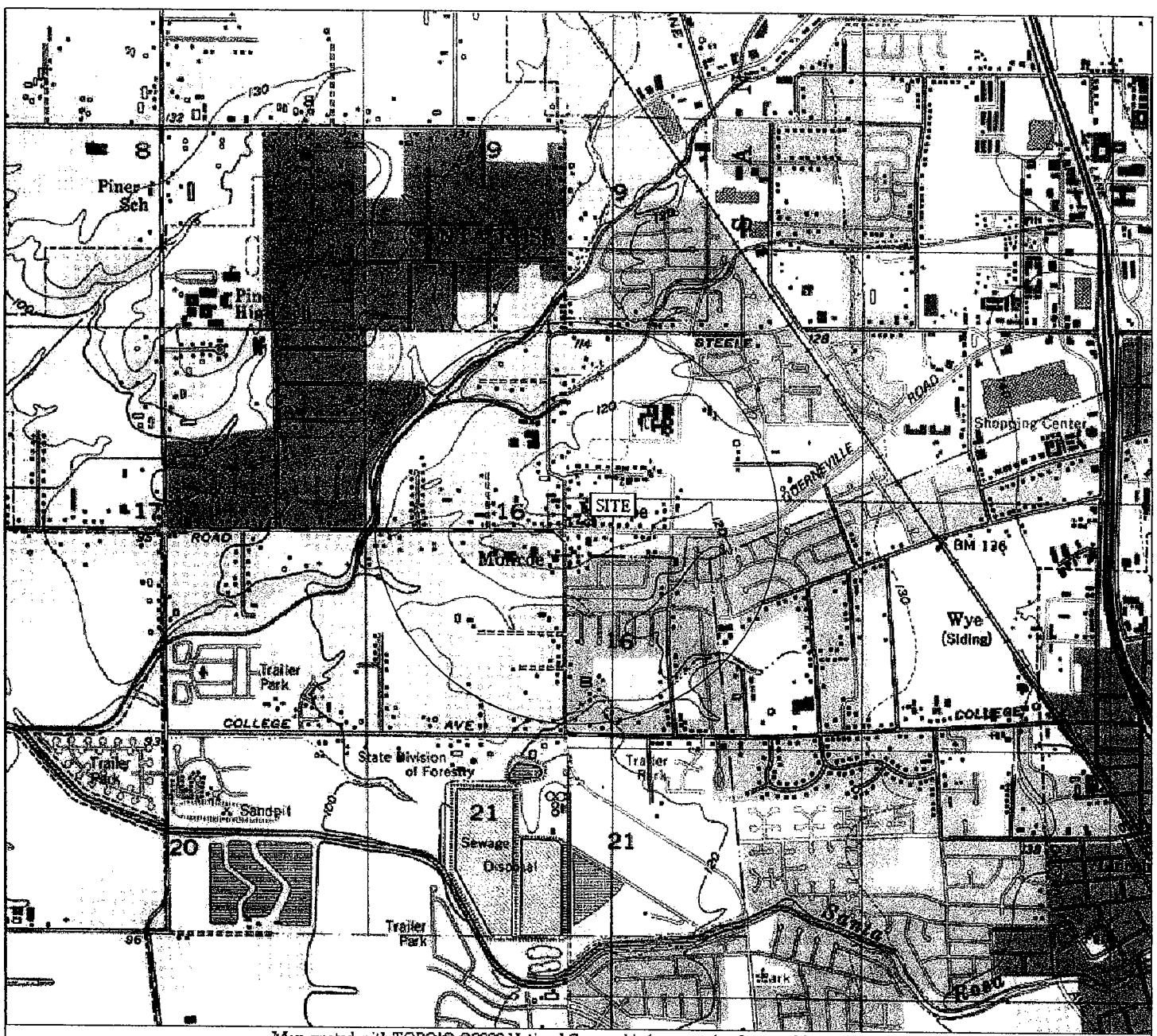
- W-54-CPT4 = Water-depth-boring number.
TPHd = Total petroleum hydrocarbons as diesel analyzed using EPA Method 8015B.
TPHg = Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8260B.
MTBE = Methyl tertiary butyl ether analyzed using EPA Method 8260B.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8260B.
DIPE = Di-isopropyl ether analyzed using EPA Method 8260B.
ETBE = Ethyl tertiary butyl ether analyzed using EPA Method 8260B.
TAME = Tertiary amyl methyl ether analyzed using EPA Method 8260B.
TBA = Tertiary butyl alcohol analyzed using EPA Method 8260B.
Methanol = Methanol analyzed using EPA Method 8260B.
Ethanol = Ethanol analyzed using EPA Method 8260B.
a = Analyzed by EPA Method 8015 with Silica Gel cleanup.
b = Hydrocarbons reported as TPHd do not exhibit a typical diesel chromatographic pattern for samples. There are discrete peaks present. The compounds represented by these peaks are probably not petroleum-related because they were removed by Silical Gel cleanup.
c = Surrogate recovery for EPA Method 8015 is above the control limit. This may indicate a bias in the analysis due to the sample's matrix or an interference with the surrogate from compounds present in the sample.
d = Analysis yielded a detect value for TPHg due to carry over; therefore, reporting limits for the analyte TPHg have been raised.

TABLE 4
SUMMARY OF CONSTITUENT CONCENTRATIONS WITHIN WATER-BEARING ZONES
REDWOOD OIL FACILITY 114
1855 GUERNVILLE ROAD
SANTA ROSA, CALIFORNIA
Page 1 of 1

WELL/CPT ID	ZONE	Screen		TPHg		Benzene		MTBE		TBA	
		Top fbgs	Bottom fbgs	Maximum ^a	Recent ^b	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
REDWOOD OIL SITE											
CPT3-26	A	—	—	8100	—	38	—	—	—	—	—
MW1	A	10.5	30.5	16000	200	28000	5.6	69	2.4	<10	<10
MW2	A	5.5	25.0	340000	1200	1400	12	260	<0.5	<50	<5
MW3	A	10.0	40.0	85700	940	2400	1.6	32	<1.0	<10	<5
MW4	A	5.0	15.0	38000	140	360	<0.5	14	0.6	<10	<5
MW5	A	3.0	13.0	970	—	20	—	—	—	—	—
MW6	A	3.0	13.0	73000	—	11000	—	—	—	—	—
MW7	A	4.0	16.0	310000	2300	24000	98	1100	5.9	16	16
MW8	A	4.0	19.0	2200000	<50	12000	<0.5	260	<1	<10	<5
MW9	A	5.0	17.0	52000	6500	900	29	7	<0.5	<200	<5
MW10	A	15.0	30.0	370	<50	93	<0.5	7.4	<0.5	<5	<5
MW11	A	5.0	20.0	370	<25	72	<0.5	2	<1.0	<5	<5
W-22-CPT7	A	—	—	<50	—	<0.50	—	<0.50	—	<5.0	—
CPT1-33	B	—	—	<50	—	<0.5	—	—	—	—	—
CPT2-50	B	—	—	<50	—	<0.5	—	—	—	—	—
W-33-CPT6	B	—	—	<50	—	<0.50	—	<0.50	—	<5.0	—
W-50-CPT7	B	—	—	<50	—	<0.50	—	1.0	—	<5.0	—
W-54-CPT4	B	—	—	<50	—	<0.50	—	0.94	—	<5.0	—
W-56-CPT7	B	—	—	<50	—	<0.50	—	<0.50	—	<5.0	—
CPT3-54	B ₁	—	—	<50	—	<0.5	—	—	—	—	—
W-68-CPT4	B ₁	—	—	59	—	<0.50	—	1.5	—	<5.0	—
W-54-CPT5	B ₂	—	—	<50	—	<0.50	—	<0.50	—	<5.0	—
W-56-CPT6	B ₂	—	—	<50	—	<0.50	—	<0.50	—	<5.0	—
W-64-CPT5	B ₂	—	—	<50	—	<0.50	—	1.8	—	<5.0	—
W-70-CPT6	B ₂	—	—	<50	—	<0.50	—	<0.50	—	<5.0	—
CPT1-62	C	—	—	<50	—	<0.5	—	—	—	—	—
CPT2-76	C	—	—	<50	—	<0.5	—	—	—	—	—
CPT3-74	C	—	—	300	—	1	—	—	—	—	—
W-76-CPT4	C	—	—	<60	—	<0.50	—	23	—	<5.0	—
W-80-CPT6	C	—	—	<50	—	<0.50	—	55	—	<5.0	—
W-80-CPT7	C	—	—	<50	—	<0.50	—	20	—	<5.0	—
W-81-CPT5	C	—	—	<50	—	<0.50	—	7.4	—	<5.0	—
W-84-CPT4	C	—	—	<50	—	<0.50	—	32	—	<5.0	—
CPT1-76	D	—	—	<50	—	<0.5	—	—	—	—	—
W-98-CPT7	D	—	—	<50	—	<0.50	—	<0.50	—	<5.0	—
W-111-CPT5	E	—	—	<50	—	<0.50	—	<0.50	—	<5.0	—
W-118-CPT6	E	—	—	<50	—	<0.50	—	<0.50	—	<5.0	—
W-120-CPT4	E	—	—	310	—	<0.50	—	<0.50	—	<5.0	—
DOMESTIC WELLS											
DW1815	Unknown	Unknown	Unknown	<50	<50	<0.5	<0.5	18	<0.50	<10	<5
DW2050	Unknown	Unknown	Unknown	<50	<50	<0.5	<0.5	27	2.4	<10	<5
DW2075	Unknown	Unknown	Unknown	<50	<50	<1	<0.5	20	<0.50	<10	<5
SHELL-BRANDED SITE											
S01	A	5.5	20.5	4500	4500	1030	380	160000	58	3000	1100
S02	A	5.5	20.5	21000	340	2000	<0.5	310	5.8	63	9.3
S03	A	5.5	20.5	240000	35000	7300	120	26.3	<10	ND	<100
S04	A	5.0	20.0	2300	61	200	<0.5	260000	7.4	54200	2700
S05	A	5.0	20.0	375	<50	1.1	<0.5	78.4	<0.5	8.5	<5
S06A	A	3.0	17.0	122	<50	<0.50	<50	<0.5	<0.5	ND	<5
S07	A	3.0	17.0	110	<50	<0.5	<0.5	<0.5	<0.5	ND	<5
S08	A	3.0	18.0	ND	<50	1.56	<0.5	39400	350	3200	<5
S09	A	3.0	18.0	81	<50	2.8	<0.5	91.2	<0.5	15	<5
S10	A	3.0	18.0	570	<50	<0.5	<0.5	47	0.83	15	<5
S11	A	3.0	18.0	91	<50	1.2	<0.5	42.7	<0.5	24	<5
S12	A	3.0	18.0	<50	<50	<0.5	<0.5	<0.5	<0.5	<5	<5
S13	A	3.0	18.0	77	<50	<0.5	<0.50	1.9	1.2	<5	<5
S14	A	3.0	18.0	130	<50	8.5	<0.5	4200	<0.5	3400	<5
S15	A	3.0	18.0	<50	<50	<0.5	<0.5	90	<0.5	10	<5
S16	A	3.0	18.0	97	<50	1.2	<0.5	2.1	<0.5	<5	<5
S17	A	3.0	18.0	<50	<50	1.1	<0.5	<0.5	<0.5	<5	<5
S18	A	3.0	18.0	<50	<50	<0.5	<0.5	<0.5	<0.5	<5	<5
S19	A	3.0	18.0	<50	<50	1.2	<0.5	2.1	<0.5	<5	<5
S22	B	38.0	43.0	ND	<5000	ND	<50	11000	4600	9700	1200
S23	B	38.0	43.0	67	<50	<0.5	<0.5	2800	4.6	3500	<5
S24	B	37.0	42.0	54	<50	86	<0.5	73	2.1	<5	<5
S27	B	35.0	45.0	ND	<1300	14	<13	3200	2300	3500	400
S28	B	32.0	42.0	2500	140	36	1.1	900	220	920	440
S20	C	67.0	72.0	72	<50	<0.5	<0.50	130	<0.5	25	<5
S25	C	67.0	72.0	<50	<50	<0.5	<0.5	4.1	<0.5	5.8	<5
S26	C	62.0	67.0	60	<50	<0.5	<0.5	8.5	<0.5	<5	<5
S21	D	90.0	95.0	<50	<50	<0.5	<0.5	93	<0.5	15	<5
EW1	UST Pit	2.0	10.0	6500	72	500	0.57	2800	280	17000	290
EW2	UST Pit	2.0	8.5	—	—	—	—	—	—	—	—

NOTES:

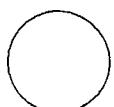
- fbgs = feet below ground surface
- ug/L = micrograms per liter
- ^a = Maximum concentration reported over life of well
- ^b = August 2005



Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

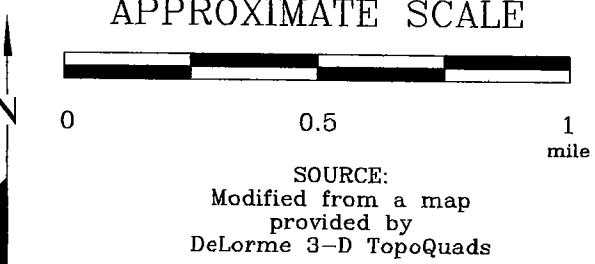
FN 2619TOP0

EXPLANATION



1/2-mile radius circle

APPROXIMATE SCALE



SOURCE:
Modified from a map
provided by
DeLorme 3-D TopoQuads

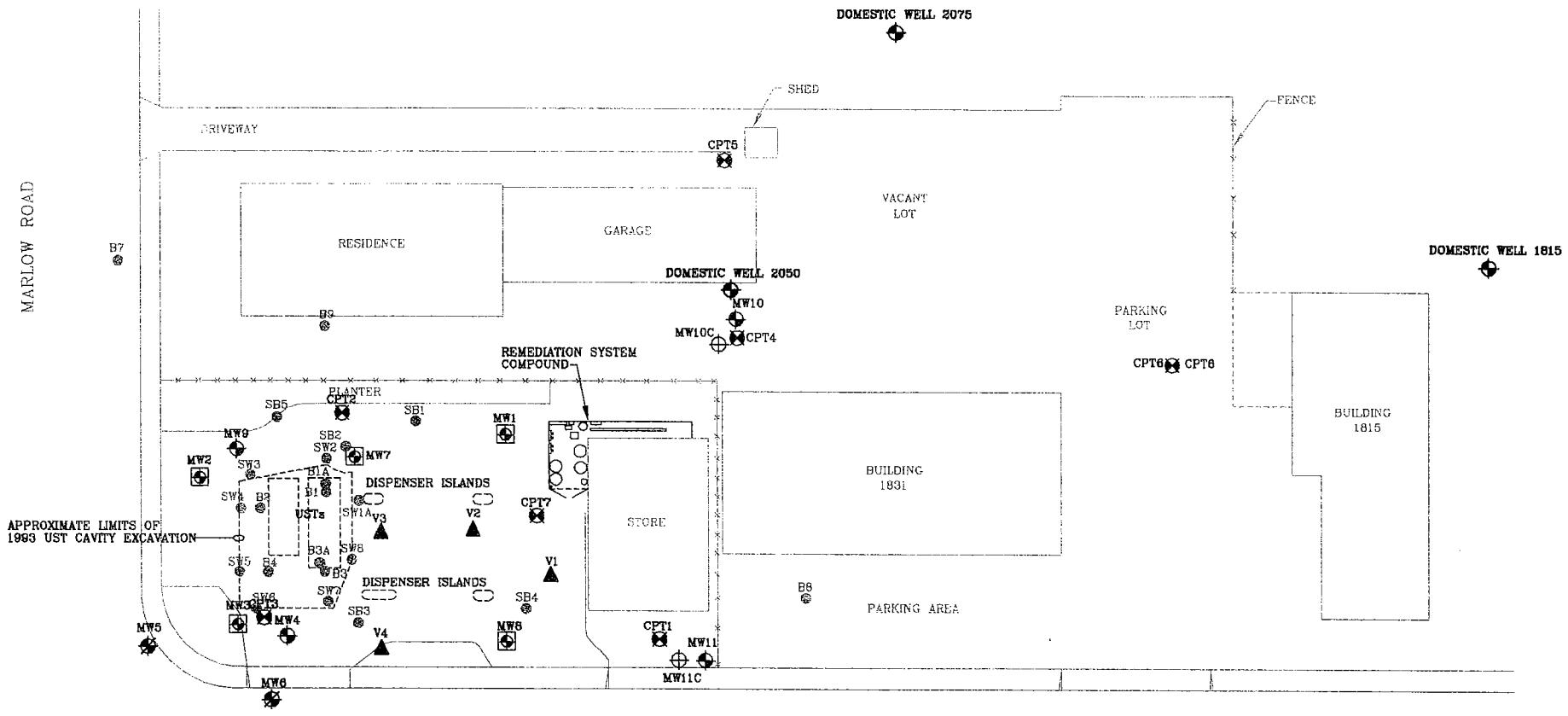
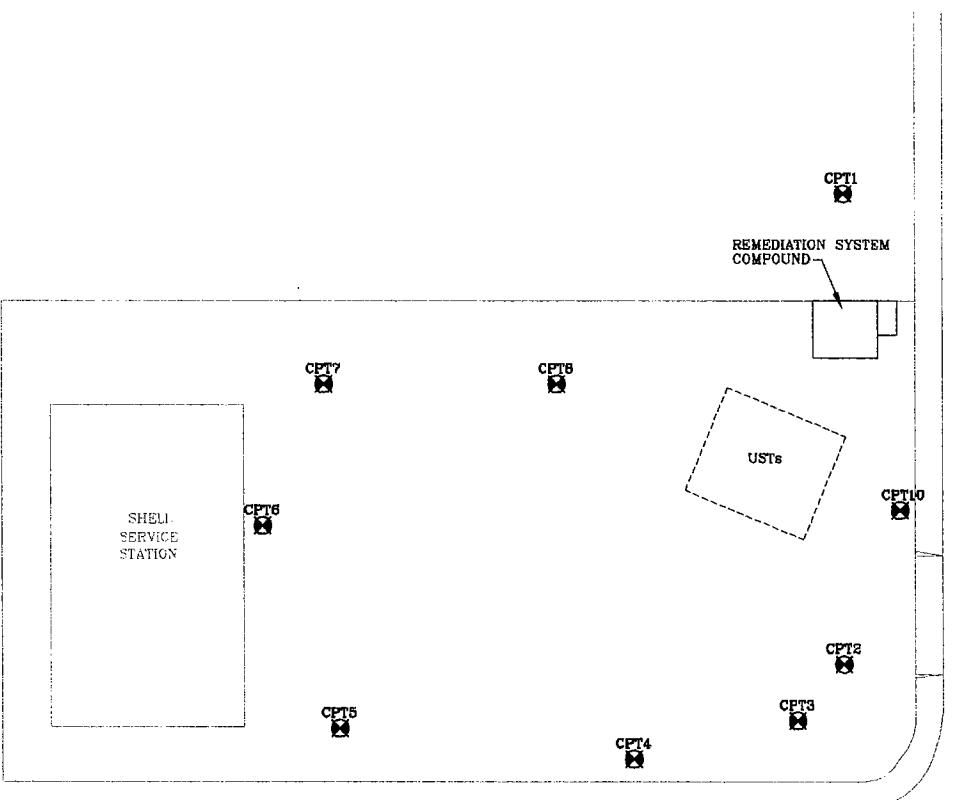


SITE VICINITY MAP

REDWOOD OIL FACILITY 114
1855 Guerneville Road
Santa Rosa, California

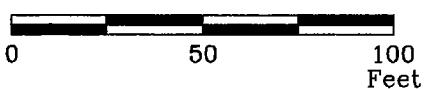
PROJECT NO.	2619
PLATE	1

N



GUERNEVILLE ROAD

APPROXIMATE SCALE



FN 26190001

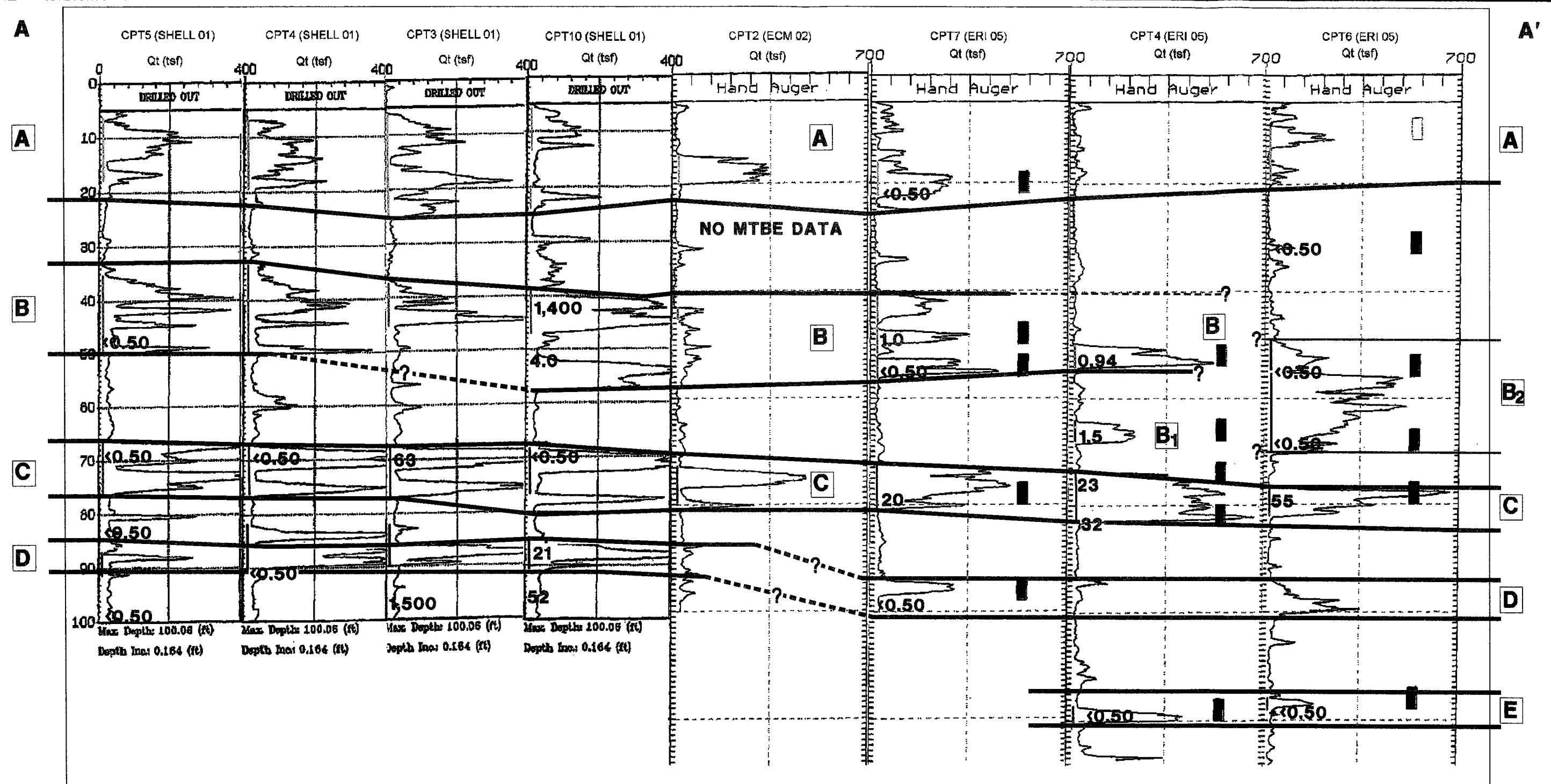


GENERALIZED SITE PLAN

REDWOOD OIL FACILITY 114
1855 Guerneville Road
Santa Rosa, California

EXPLANATION

MW11	Groundwater Monitoring Well	CPT7	Cone Penetrometer (CPT)	PROJECT NO.	2619
CPT10	Cone Penetrometer - CPT (Shell 2002)	MW11C	Proposed Groundwater Monitoring Well	PLATE	2
MW8	Groundwater Recovery Well	B8	Soil Boring		
MW6	Destroyed Groundwater Monitoring Well	SVE4	Soil Vapor Extraction Well		



55 MTBE Concentration (microgram per liter)

E Zone Designation

Groundwater Sample

No Recovery

FN 2619 MTBE XS_SP

NOT TO SCALE



CPT CROSS SECTION A-A' AND MTBE CONCENTRATIONS

REDWOOD OIL FACILITY 114
1855 Guerneville Road
Santa Rosa, California

REFERENCES

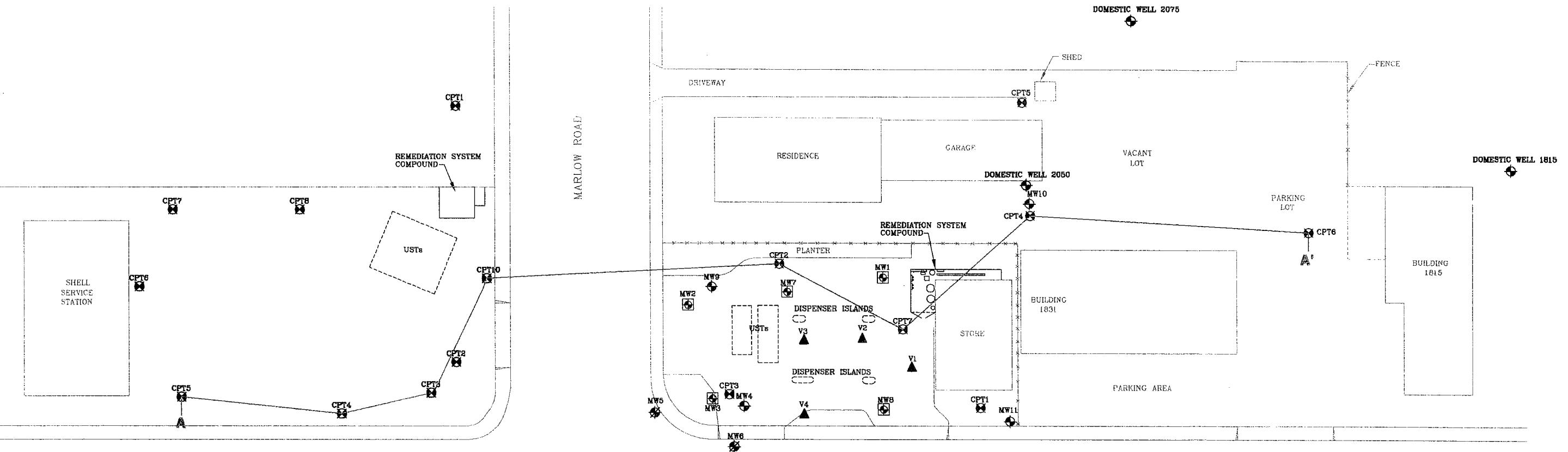
Cambria Environmental Technology, Inc. November 10, 2001. Site Investigation Report/Groundwater Monitoring Report, Fourth Quarter 2001, Shell-branded Service Station, 2005 Guerneville Road, Santa Rosa, California, Incident #: 98996132, SAP Code: 1380990; RWQCB Case No. ITSR277

ECM Group June 10, 2002. Subsurface Investigation Report, Redwood Oil Service Station #114, 1855 Guerneville Road, Santa Rosa, California, ECM Project #98-508-32

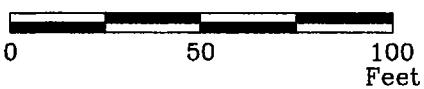
PROJECT NO.

PLATE
3

N



APPROXIMATE SCALE



FN 26190001_SP

A-A'
Cross Section Location



CPT CROSS SECTION LOCATION MAP

REDWOOD OIL FACILITY 114
1855 Guerneville Road
Santa Rosa, California

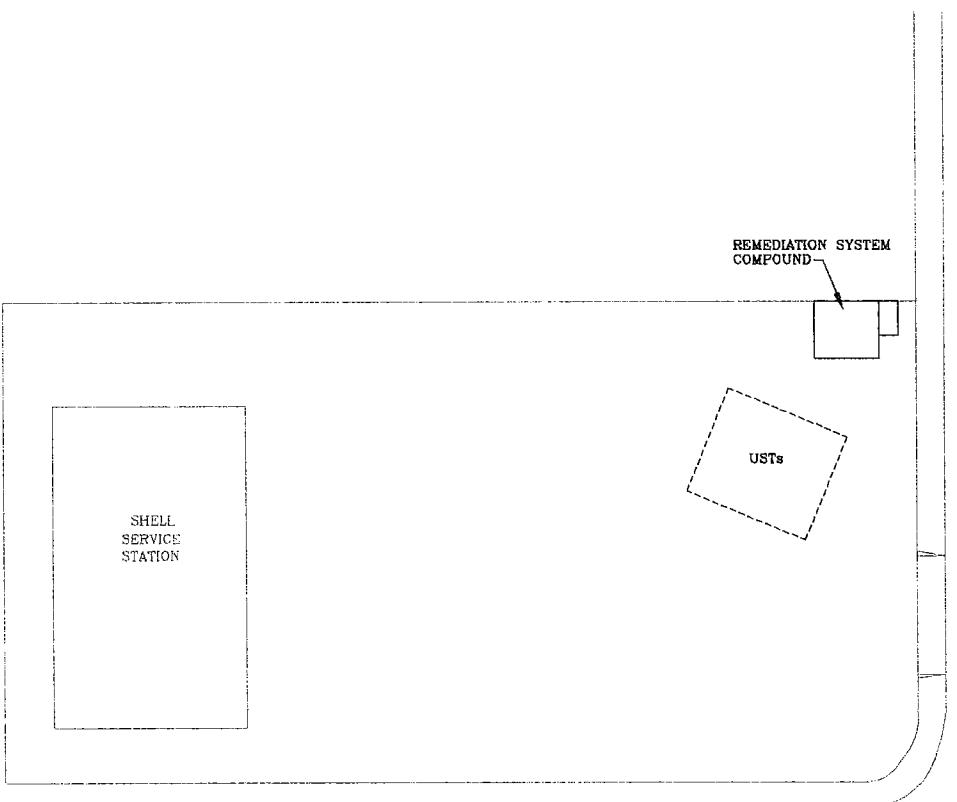
EXPLANATION

- MW11 Domestic Well
- MW8 Groundwater Monitoring Well
- MW2 Groundwater Recovery Well
- MW7 Cone Penetrometer (CPT)
- MW1 Cone Penetrometer - CPT (Shell 2002)
- MW3 Cone Penetrometer - CPT (Shell 2002)
- MW4 Cone Penetrometer - CPT (Shell 2002)
- MW5 Cone Penetrometer - CPT (Shell 2002)
- MW6 Cone Penetrometer - CPT (Shell 2002)
- MW9 Cone Penetrometer - CPT (Shell 2002)
- MW12 Cone Penetrometer - CPT (Shell 2002)
- SVE4 Destroyed Groundwater Monitoring Well
- V1 Soil Vapor Extraction Well
- V2 Soil Vapor Extraction Well
- V3 Soil Vapor Extraction Well
- V4 Soil Vapor Extraction Well

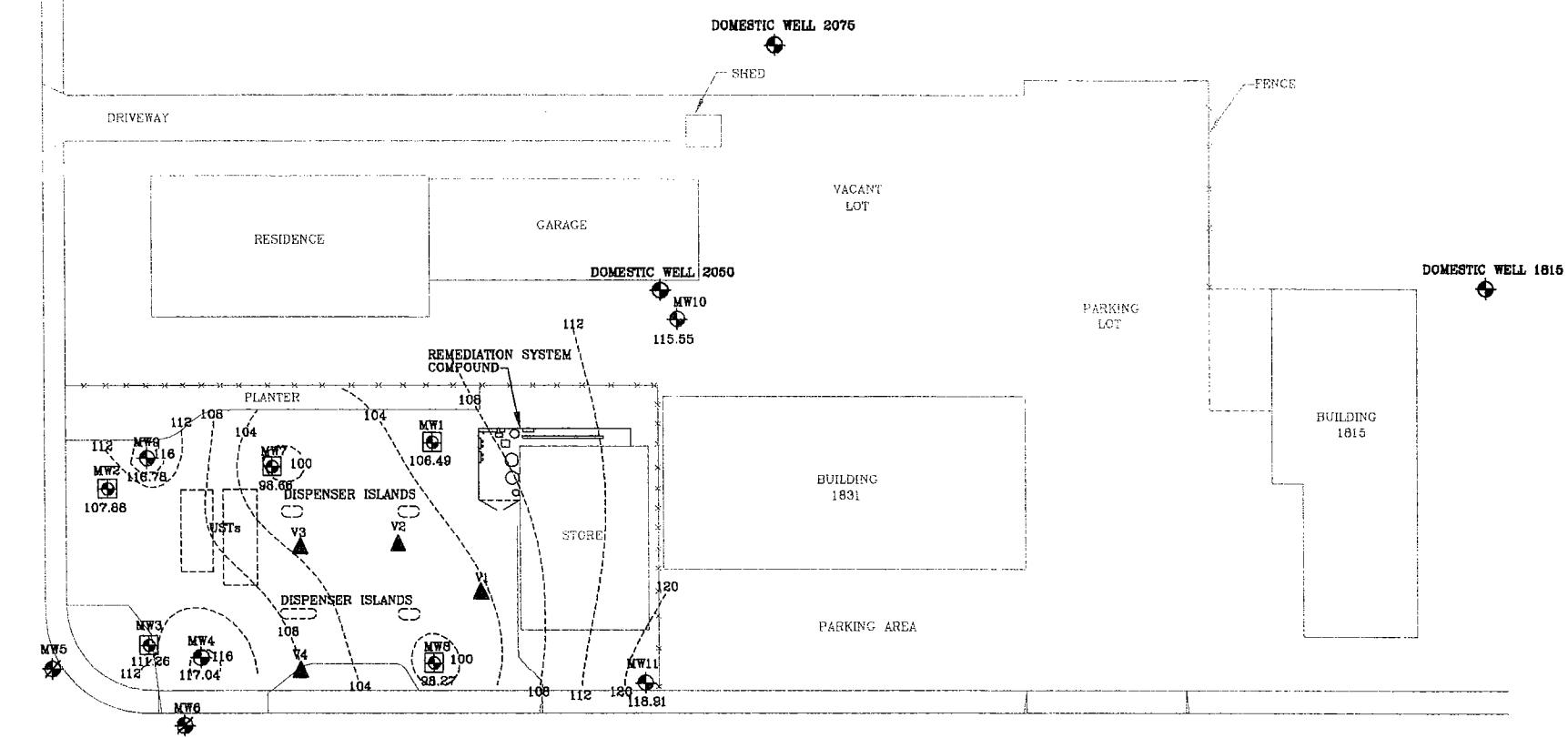
PROJECT NO.
2619

PLATE
4

N

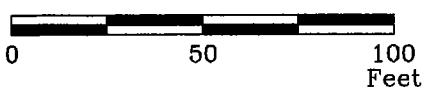


MARLOW ROAD



GUERNEVILLE ROAD

APPROXIMATE SCALE



FN 26190001_QM



GROUNDWATER ELEVATION MAP April 6, 2004

REDWOOD OIL FACILITY 114
1855 Guerneville Road
Santa Rosa, California

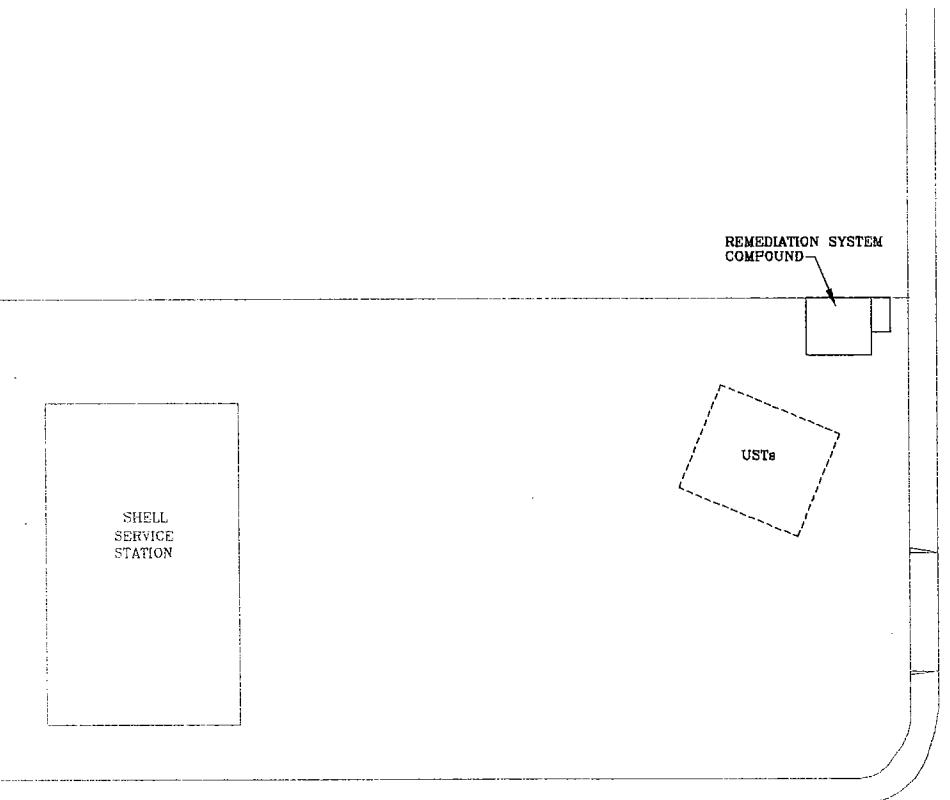
EXPLANATION

- MW11** Groundwater Monitoring Well
- 118.91 Groundwater elevation in feet; datum is mean sea level.
- MW8** Groundwater Recovery Well
- MW6** Destroyed Groundwater Monitoring Well
- SVE4** Soil Vapor Extraction Well

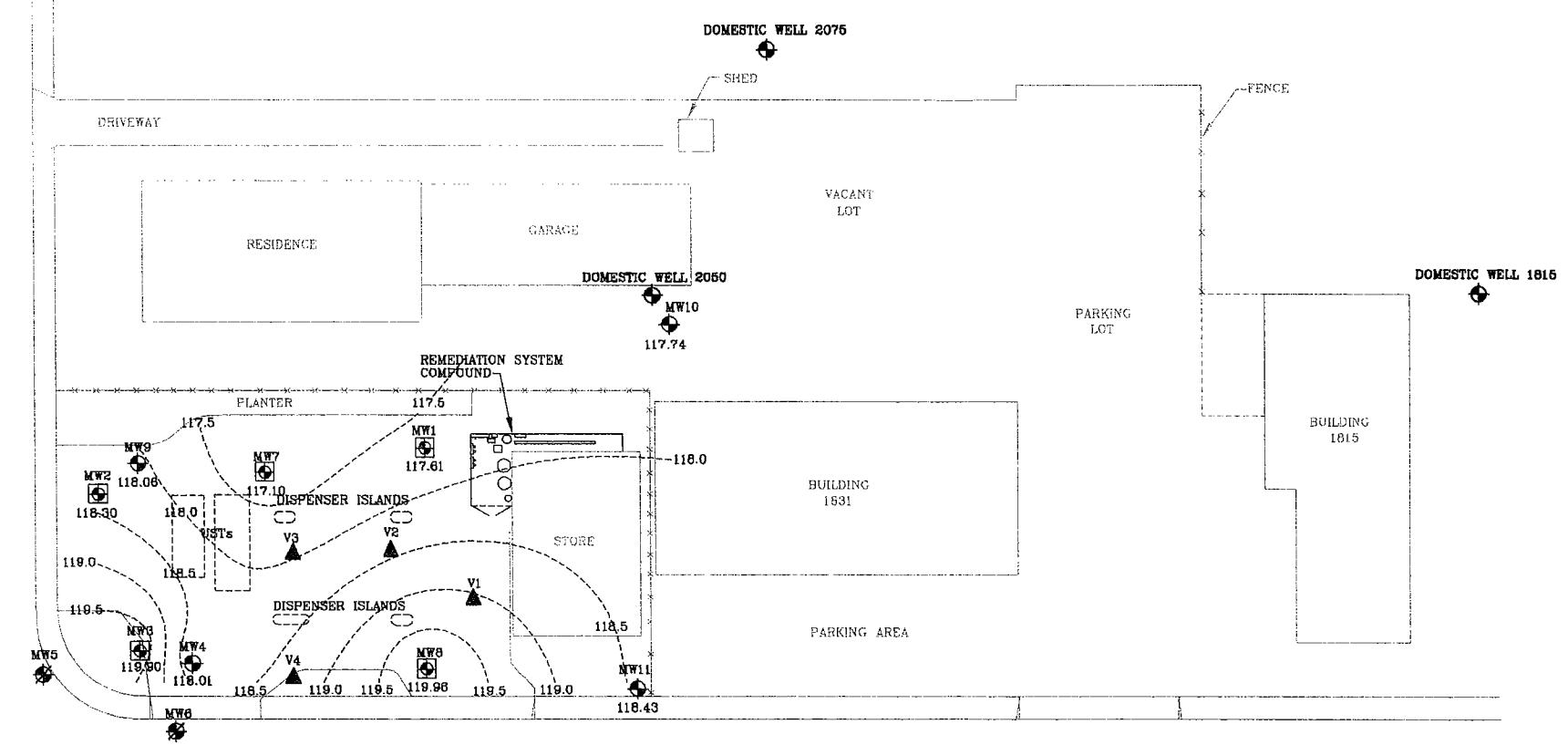
PROJECT NO.
2619

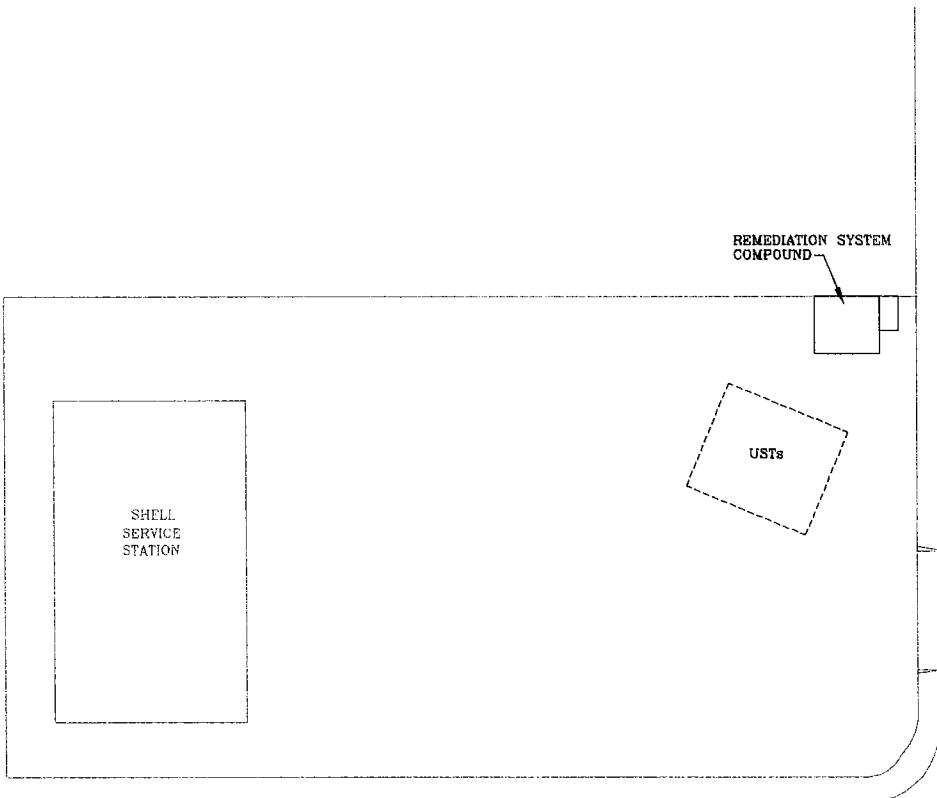
PLATE
5

N



MARLOW ROAD





APPROXIMATE SCALE

A horizontal scale bar with tick marks at 0, 50, and 100 feet.

FN 26190001_QM



GROUNDWATER ELEVATION MAP

August 24, 2005

REDWOOD OIL FACILITY 114
1855 Guerneville Road
Santa Rosa, California

EXPLANATION

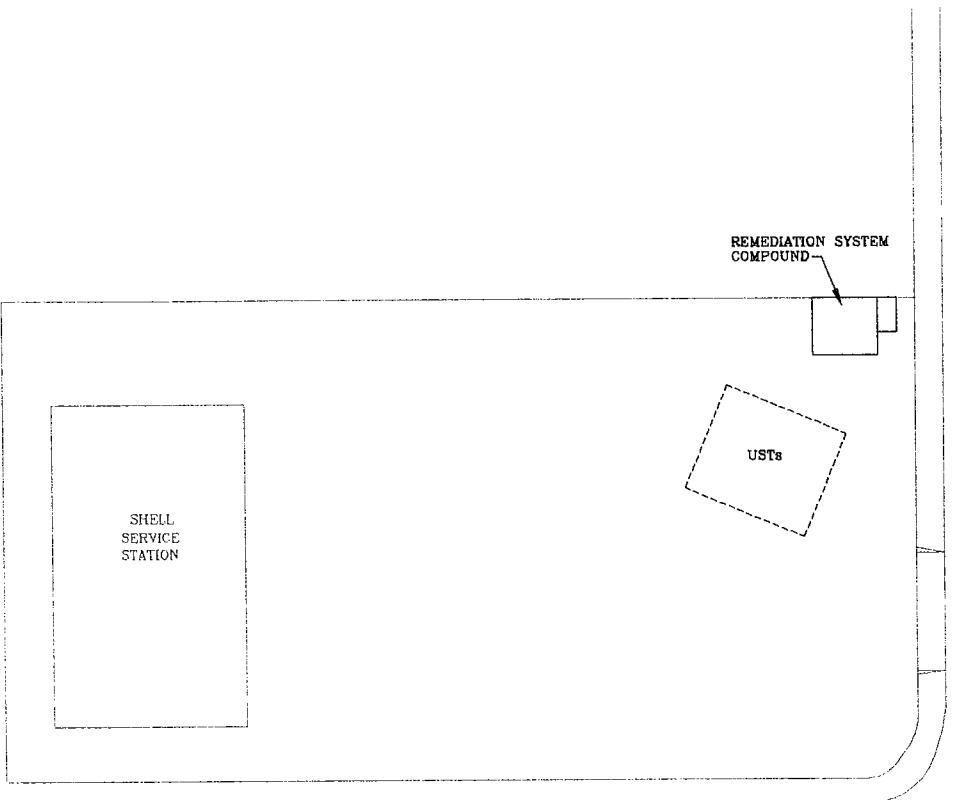
- MW11**  Groundwater Monitoring Well
 - 114.14 Groundwater elevation in feet;
datum is mean sea level
 - MW8**  Groundwater Recovery Well
 - MW6**  Destroyed Groundwater Monitoring Well

 Domestic Well

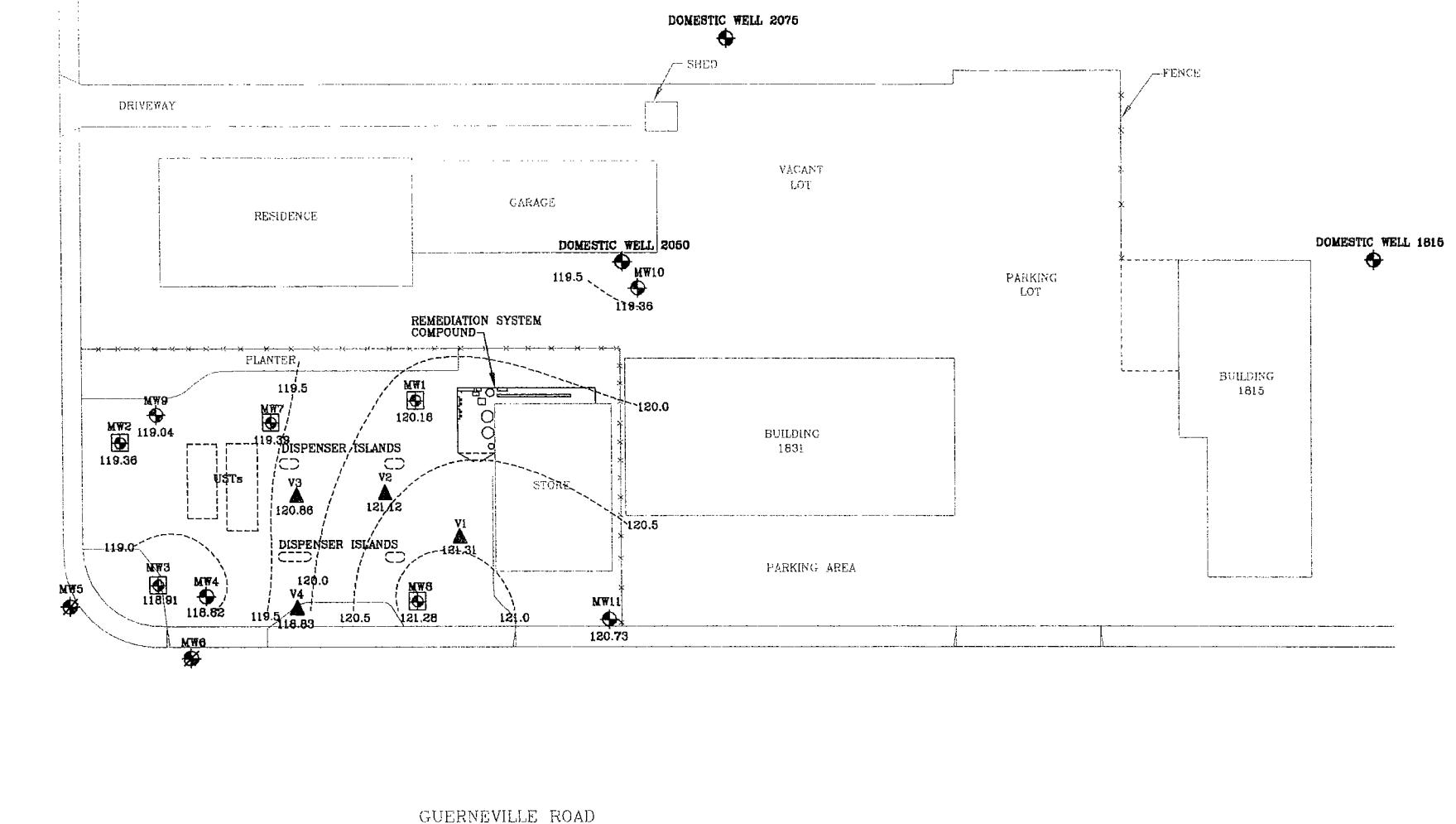
SVE4
▲ Soil Vapor Extraction Well

PROJECT NO.
2619

N

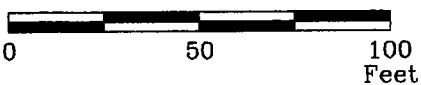


MARLOW ROAD



GUERNÉVILLE ROAD

APPROXIMATE SCALE



FN 26190001_QM



GROUNDWATER ELEVATION MAP March 8, 2006

REDWOOD OIL FACILITY 114
1855 Guerneville Road
Santa Rosa, California

EXPLANATION

- MW11** Groundwater Monitoring Well
- 120.73 Groundwater elevation in feet; datum is mean sea level
- MW8** Groundwater Recovery Well
- MW6** Destroyed Groundwater Monitoring Well

Domestic Well (With Well Head Treatment System)
121.0----- Line of Equal Groundwater Elevation;
datum is mean sea level

SVE4
▲ Soil Vapor Extraction Well

PROJECT NO.
2619

PLATE
8

ATTACHMENT A

REGULATORY CORRESPONDENCE



California Regional Water Quality Control Board
North Coast Region
Beverly Wasson, Chairperson

Alan C. Lloyd, Ph.D.
Agency Secretary

www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135



Arnold
Schwarzenegger
Governor

January 10, 2006

Mr. Robert Barbieri
Mr. Peter Van Alyea
Redwood Oil Company
P.O. Box 428
Santa Rosa, CA 95402

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JAN 12 2006
BY:

Gentlemen:

Subject: Comments on Supplemental Evaluation of Groundwater and Domestic Well Head Treatment System Installation
File: Redwood Oil #114, 1855 Guerneville Road, Santa Rosa, Case No. 1TSR088

Regional Water Board staff have reviewed the November 3, 2005 *Supplemental Evaluation of Groundwater and Domestic Well Head Treatment System Installation* prepared by Environmental Resolutions, Inc. (ERI) for 1855 Guerneville Road in Santa Rosa. Regional Water Board staff comments are:

- We concur with the ERI recommendation to evaluate alternatives to remediate residual and dissolved-phase hydrocarbons remaining in soil and shallow groundwater beneath the site. Cleanup alternatives must be considered for all site contaminants, including Methyl tertiary Butyl Ether (MtBE).
- Evidence was not provided to show that the source of MtBE originated from an off site source.
- A groundwater monitoring well network must be established for the deeper water bearing zone impacts. Remediation for deeper water bearing zones will then be evaluated based on the results.
- Water supply well sampling must continue on a monthly schedule.

We look forward to receipt of a Corrective Action Plan addendum to address the shallow impacts and a work plan for the installation of a ground water monitoring well network for the deeper impacted zones within 60 days of issuance of this letter. If you have any questions I can be reached at (707) 576-2675.

Sincerely,

Joan Fleck

Joan Fleck
Engineering Geologist

California Environmental Protection Agency

Recycled Paper

Mr. Robert Barbieri
Mr. Peter Van Alyea

-2-

January 10, 2006

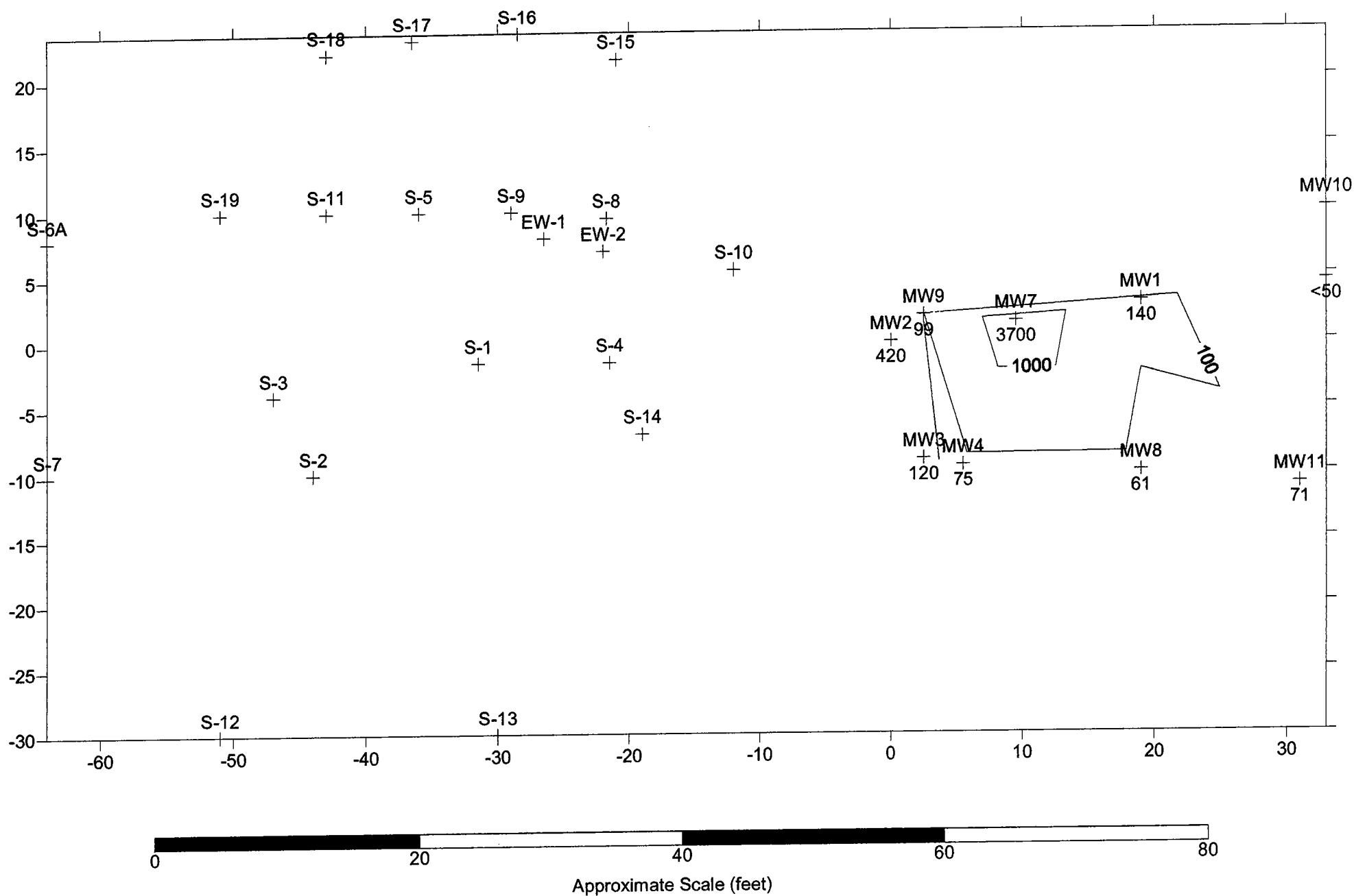
011006_JEF_RedOil

cc: Mr. Glenn Matteucci, Environmental Resolutions, Inc. 601 North McDowell Boulevard,
Petaluma, CA 94954
Ms. Corey Vincent, Santa Rosa Fire Department
Ms. Judy Emis, P.O. Box 18, Mount Angel, Oregon, 97362
Ms. Christine Emis, 2075 Marlow Road, Santa Rosa, CA 95401
The Callison Family, 2050 Marlow Road, Santa Rosa, CA 95401

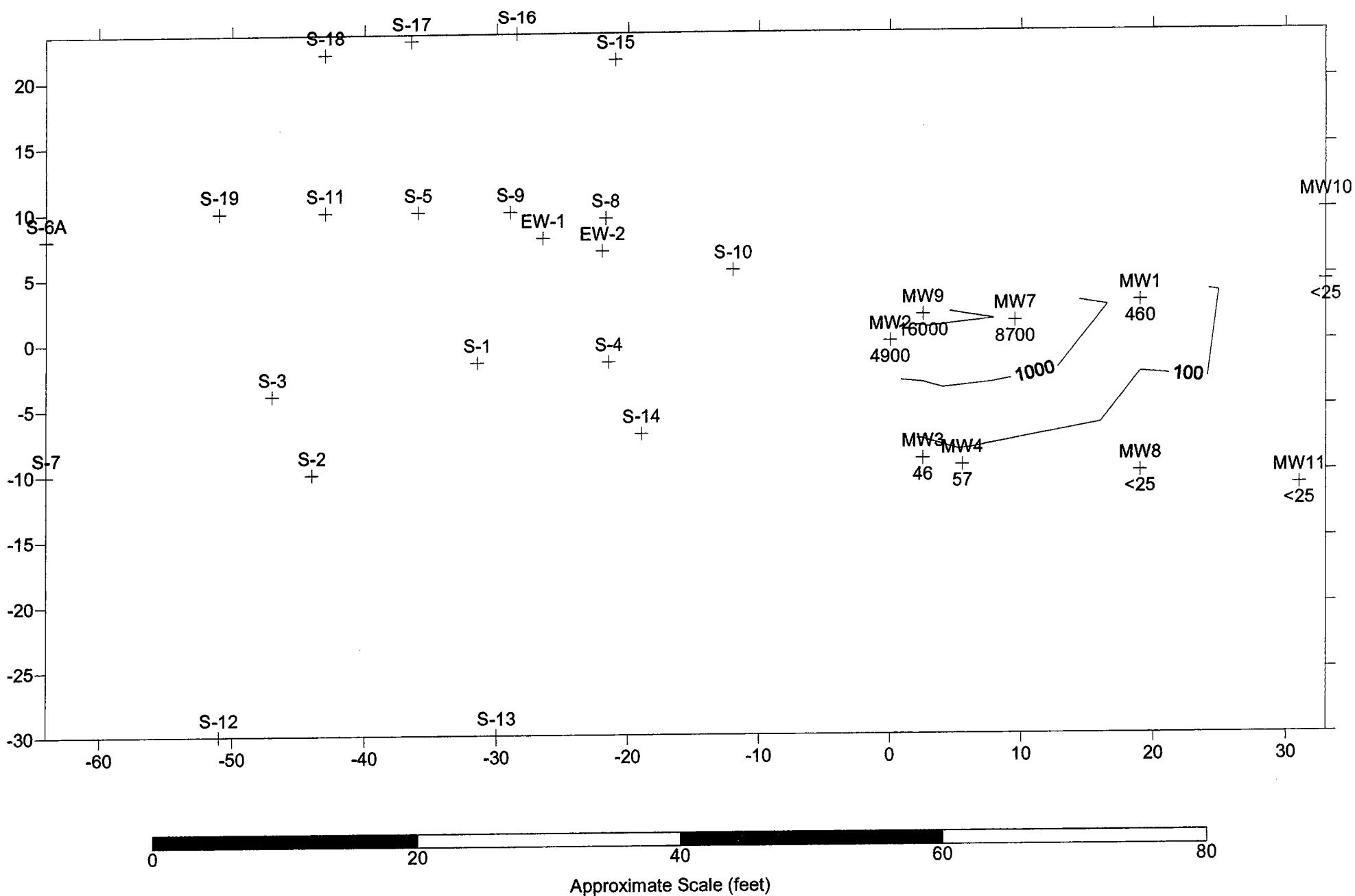
ATTACHMENT B

TIME SERIES ISOCONCENTRATION MAPS

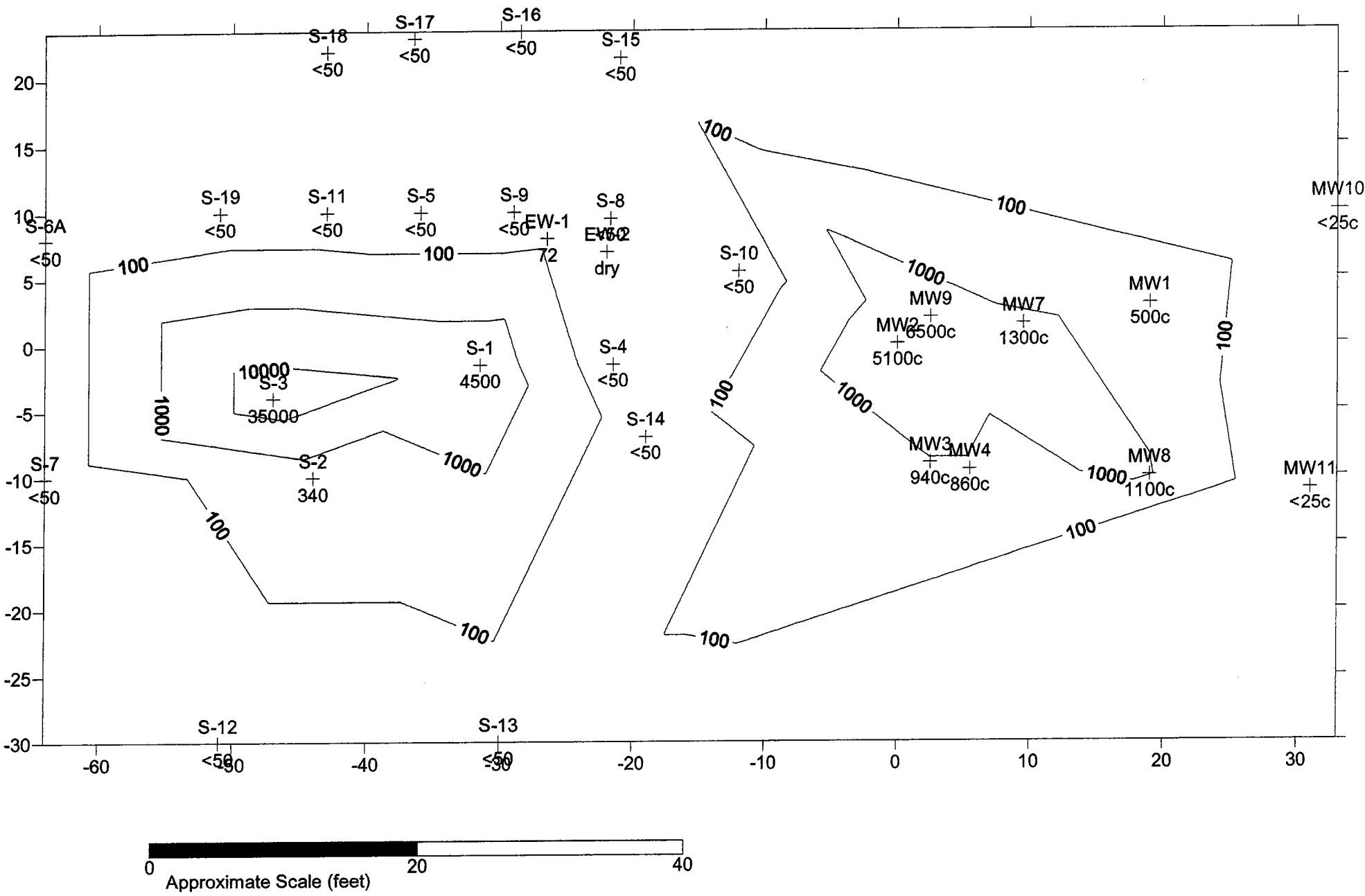
TPHg Isoconcentration Map April 6, 2004



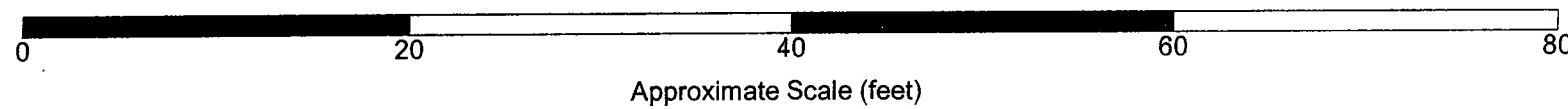
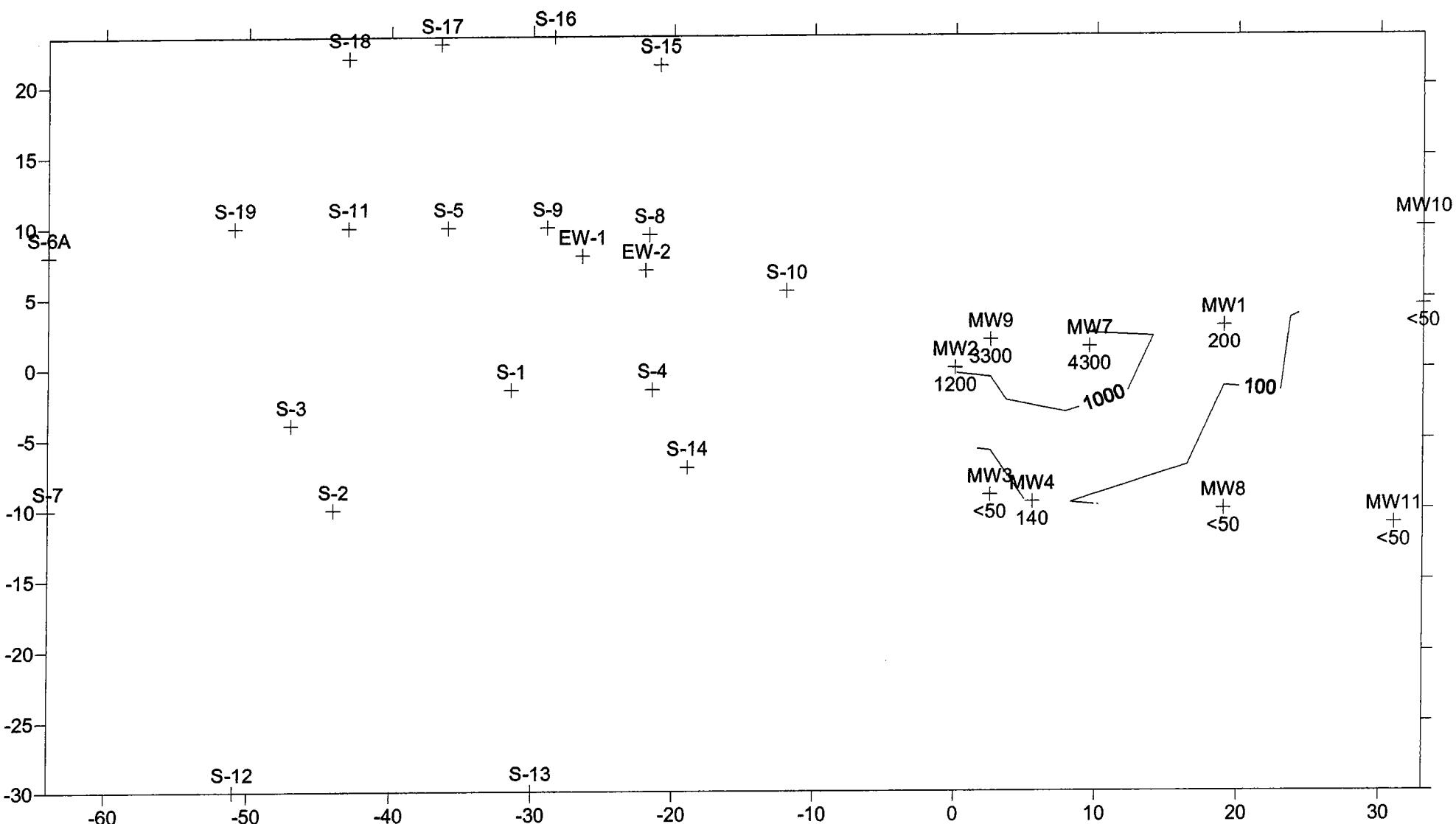
TPHg Isoconcentration Map
April 22, 2005



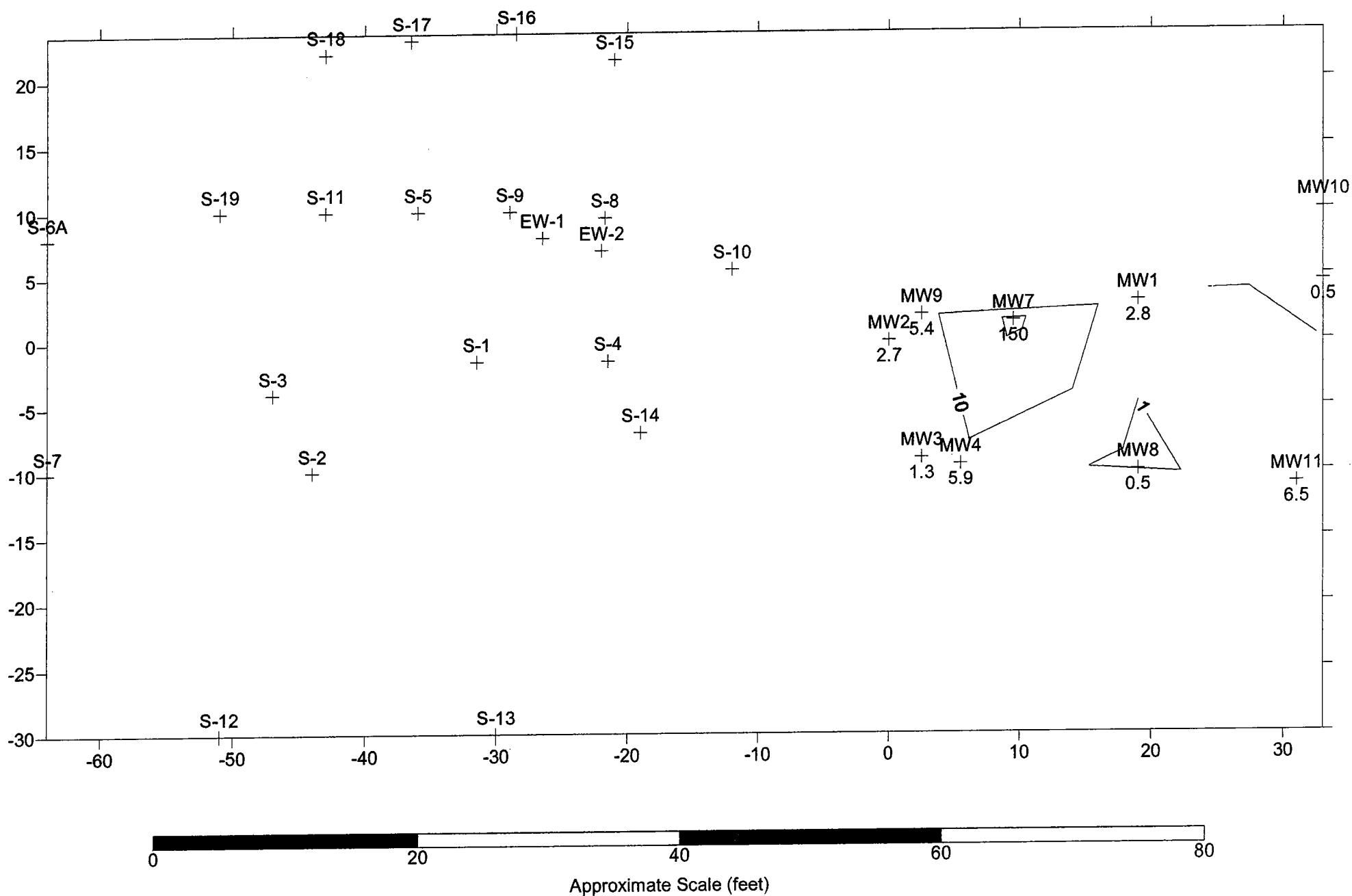
TPHg Isoconcentration Map August 2005



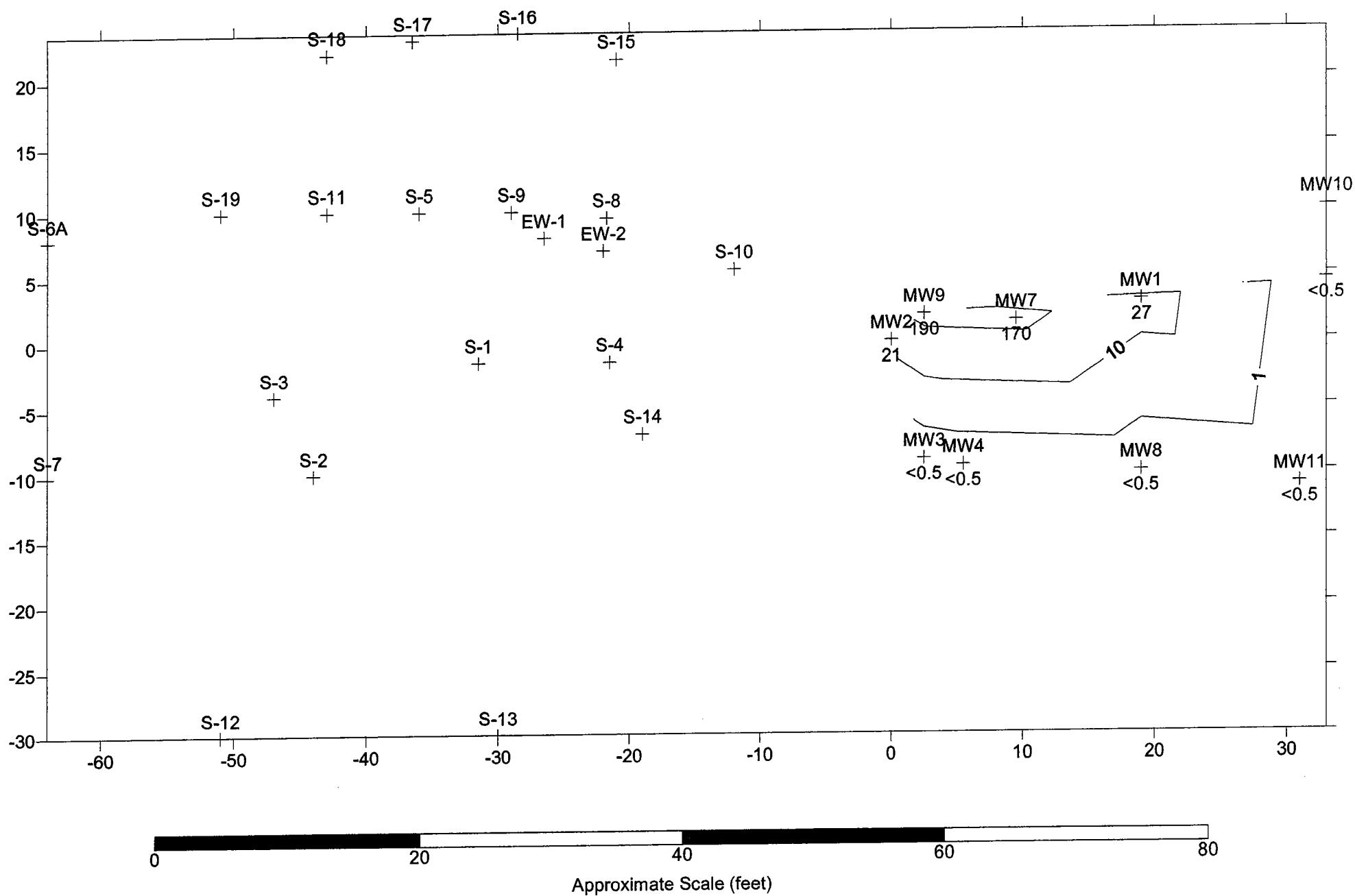
TPHg Isoconcentration Map
March 8, 2006



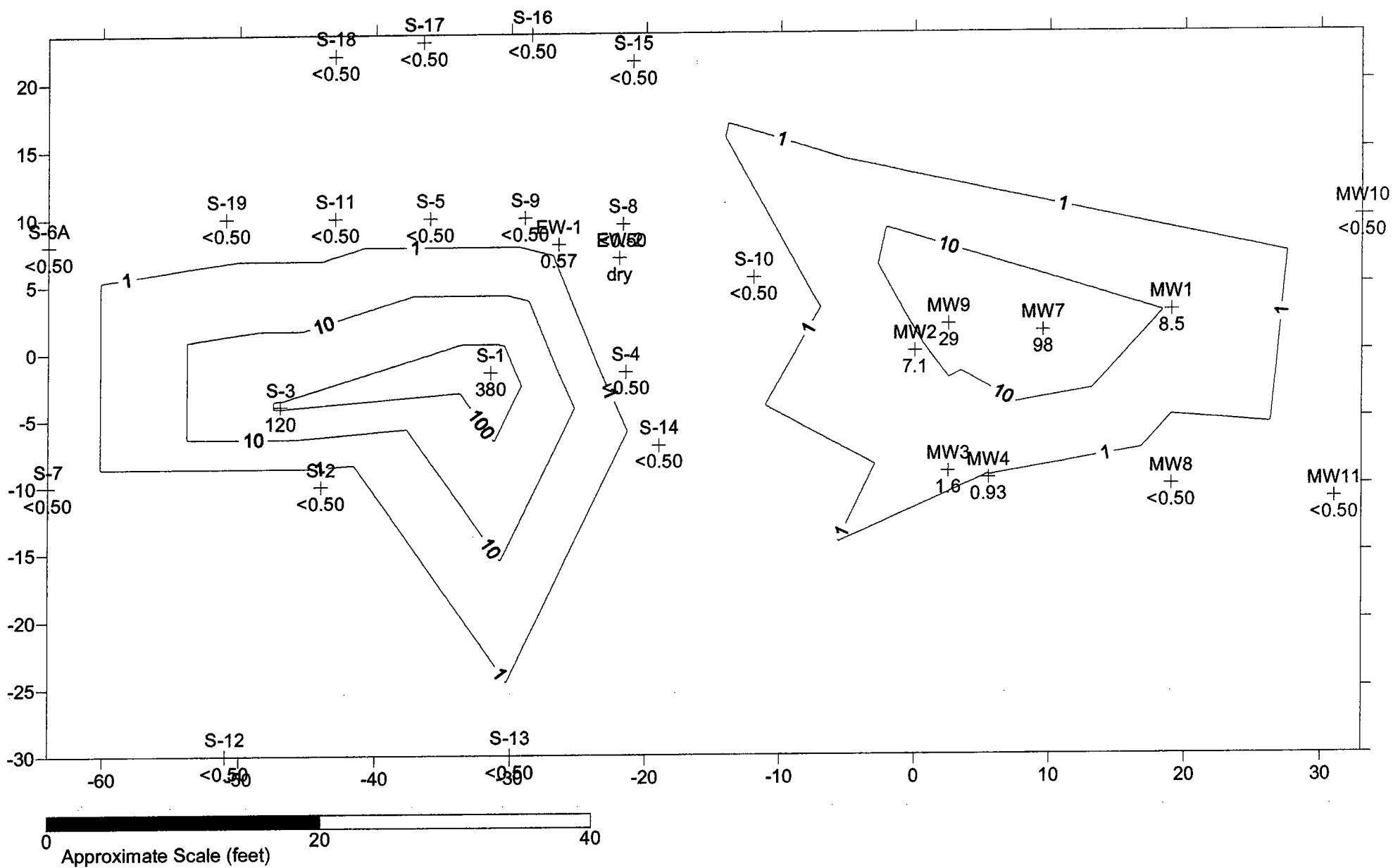
Benzene Isoconcentration Map
April 6, 2004



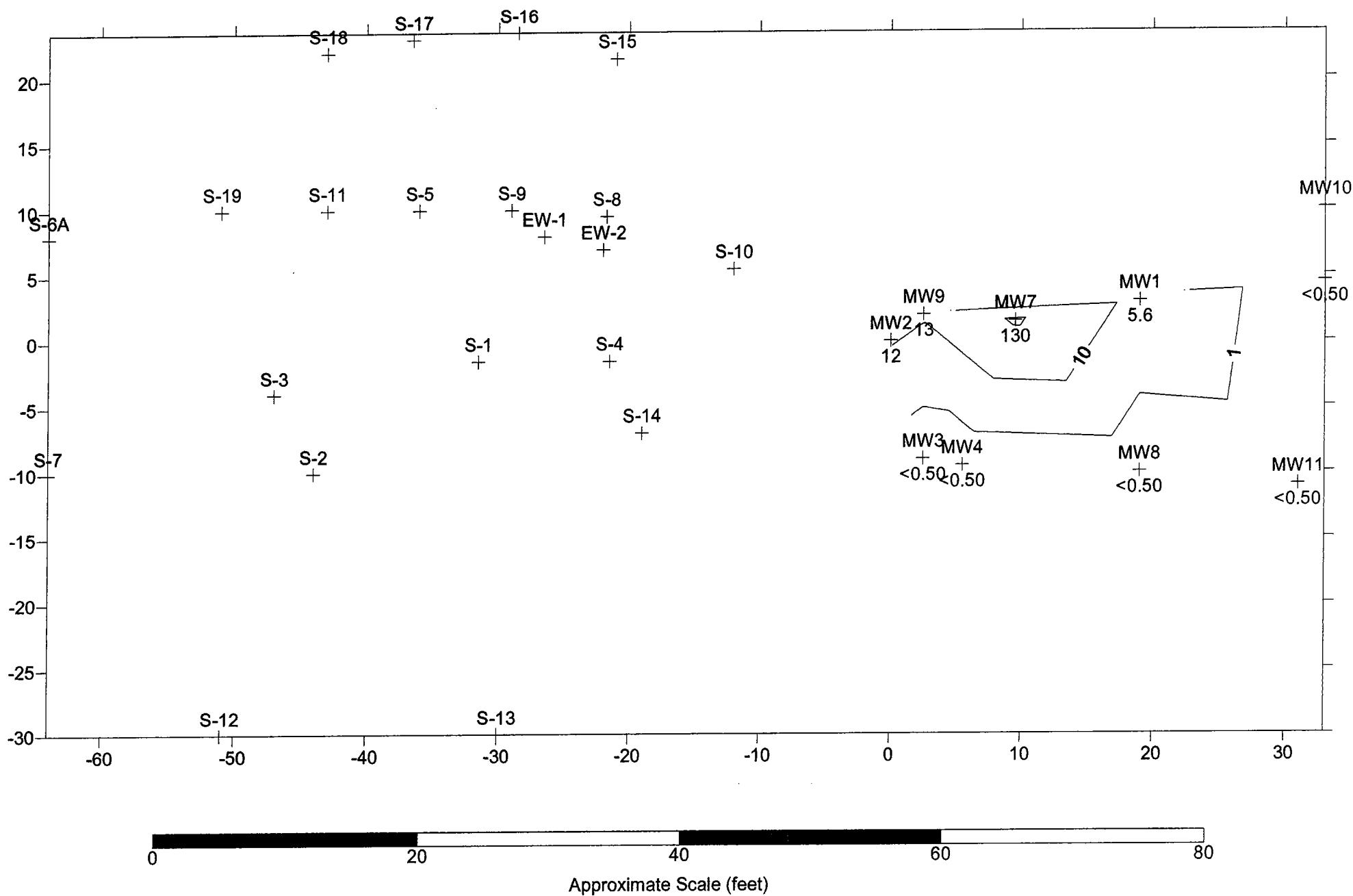
Benzene Isoconcentration Map
April 22, 2005



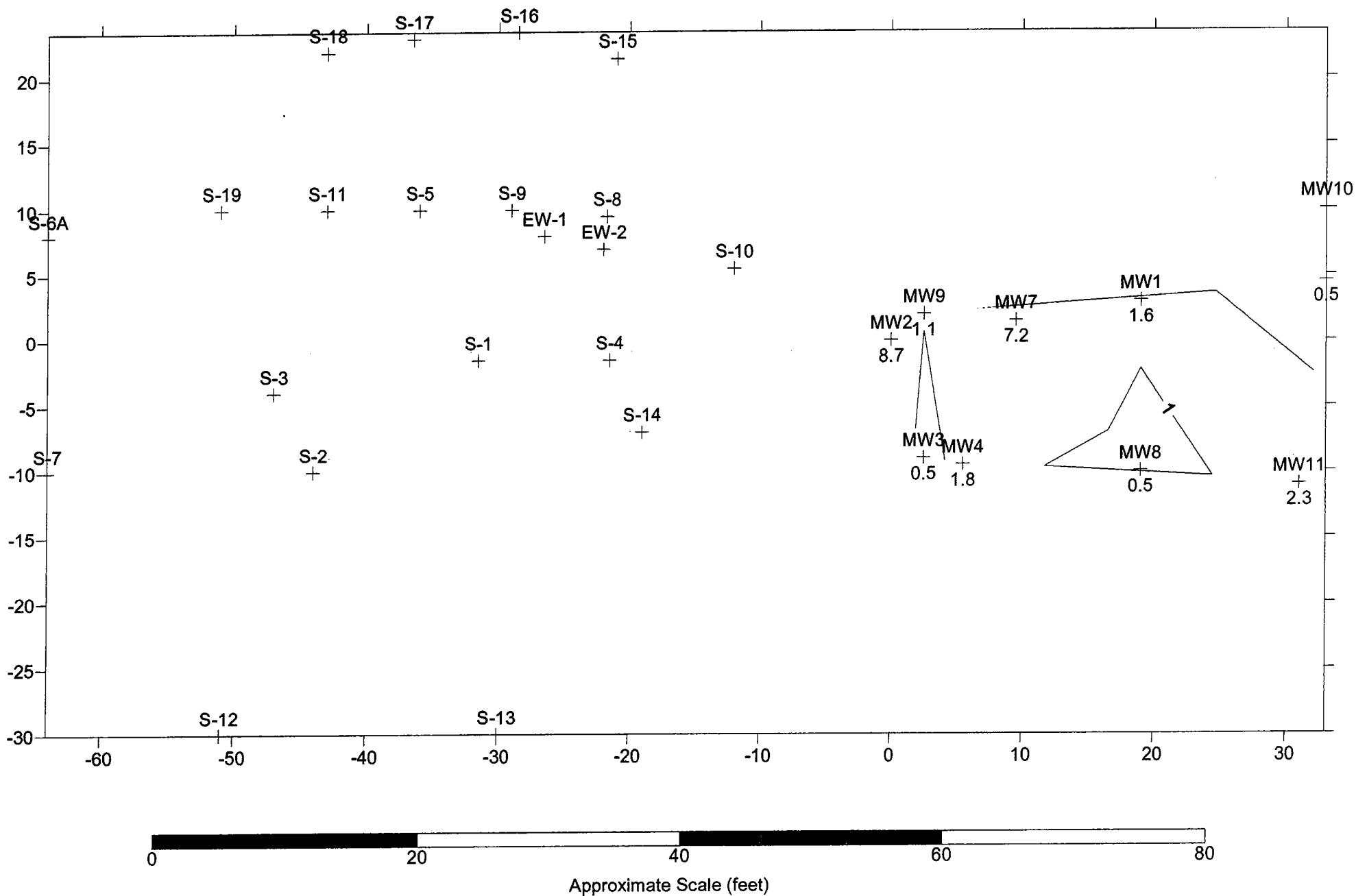
Benzene Isoconcentration Map August 2005



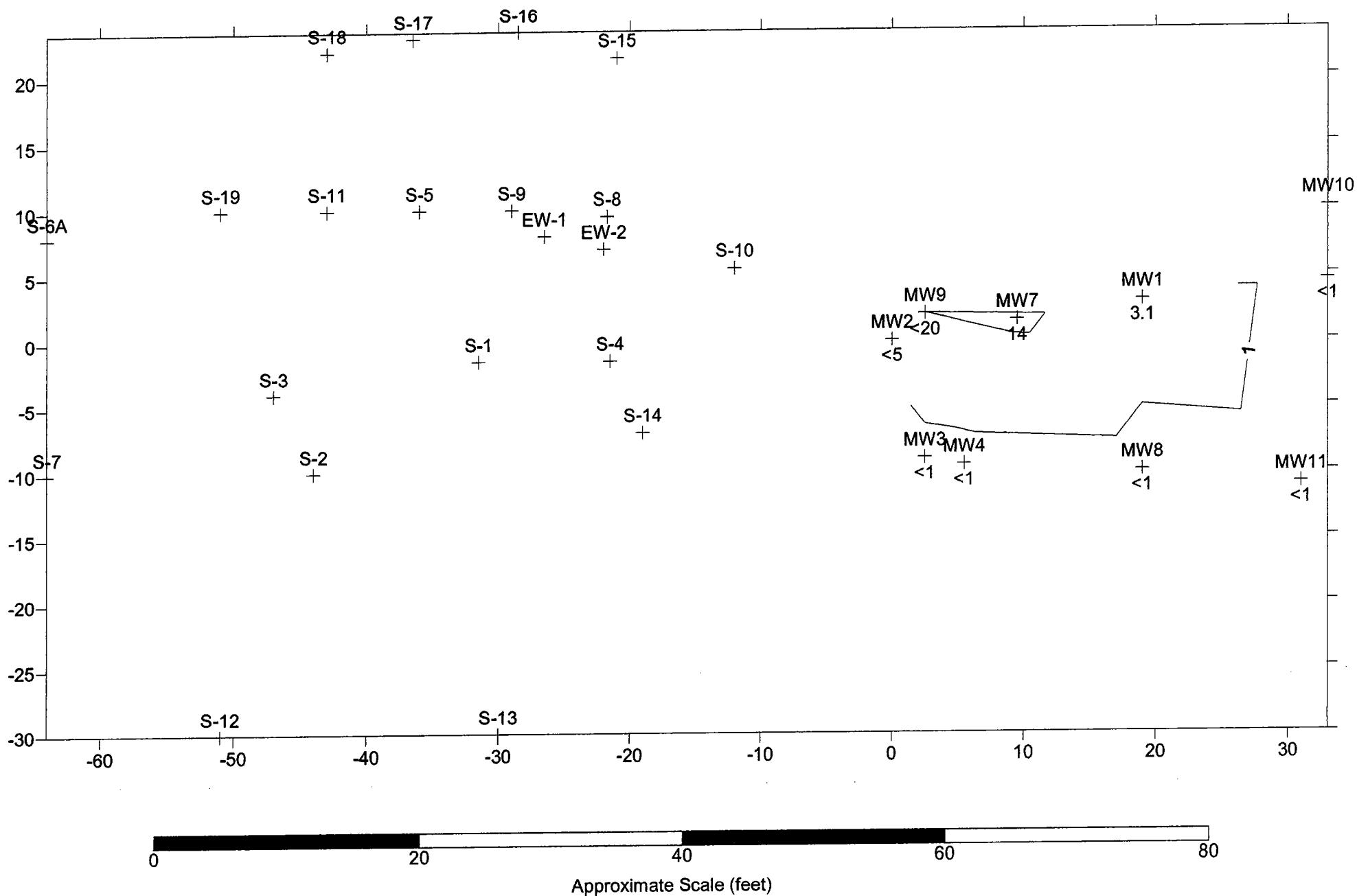
Benzene Isoconcentration Map
March 8, 2006



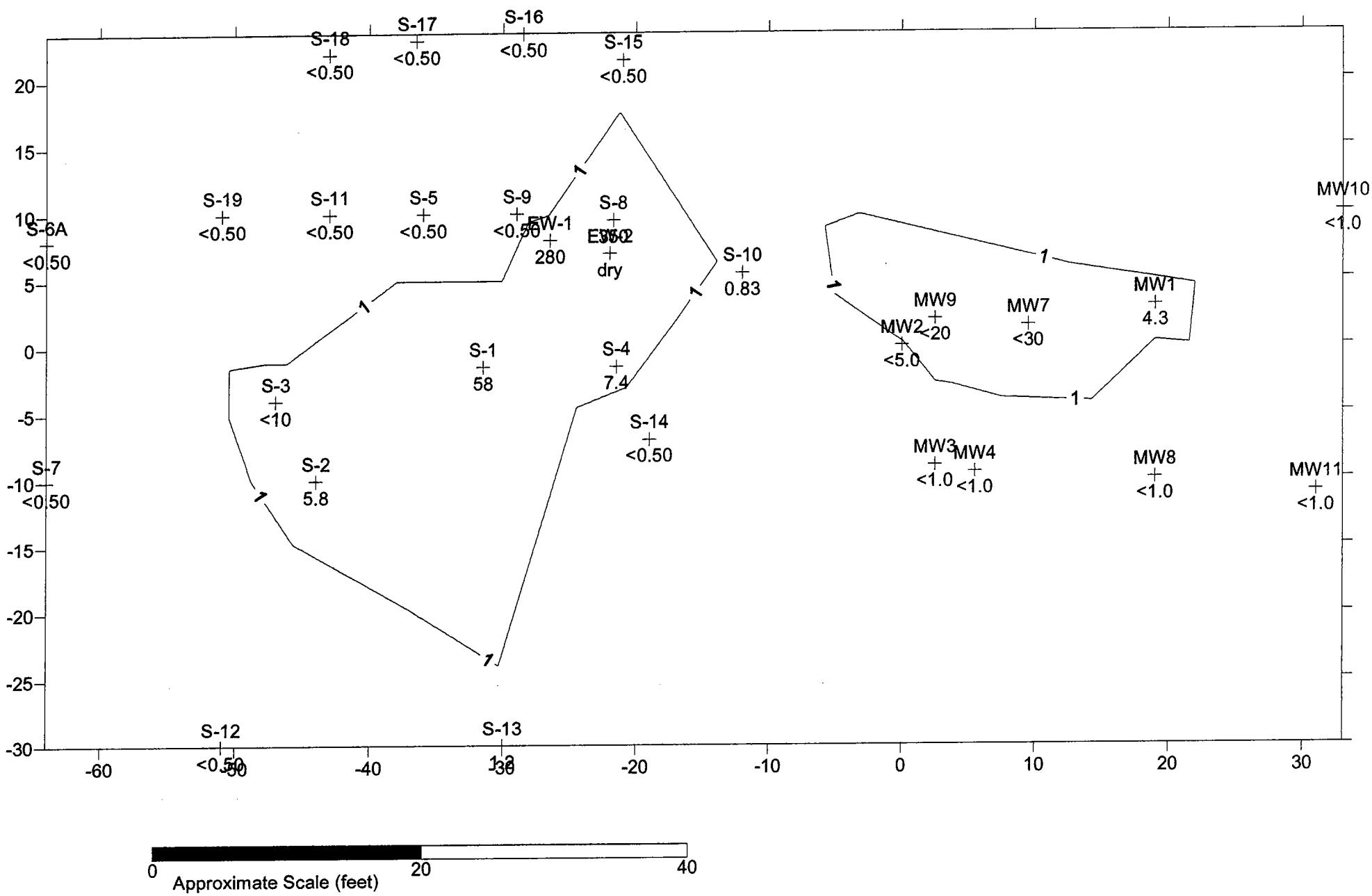
MTBE Isoconcentration Map
April 6, 2004



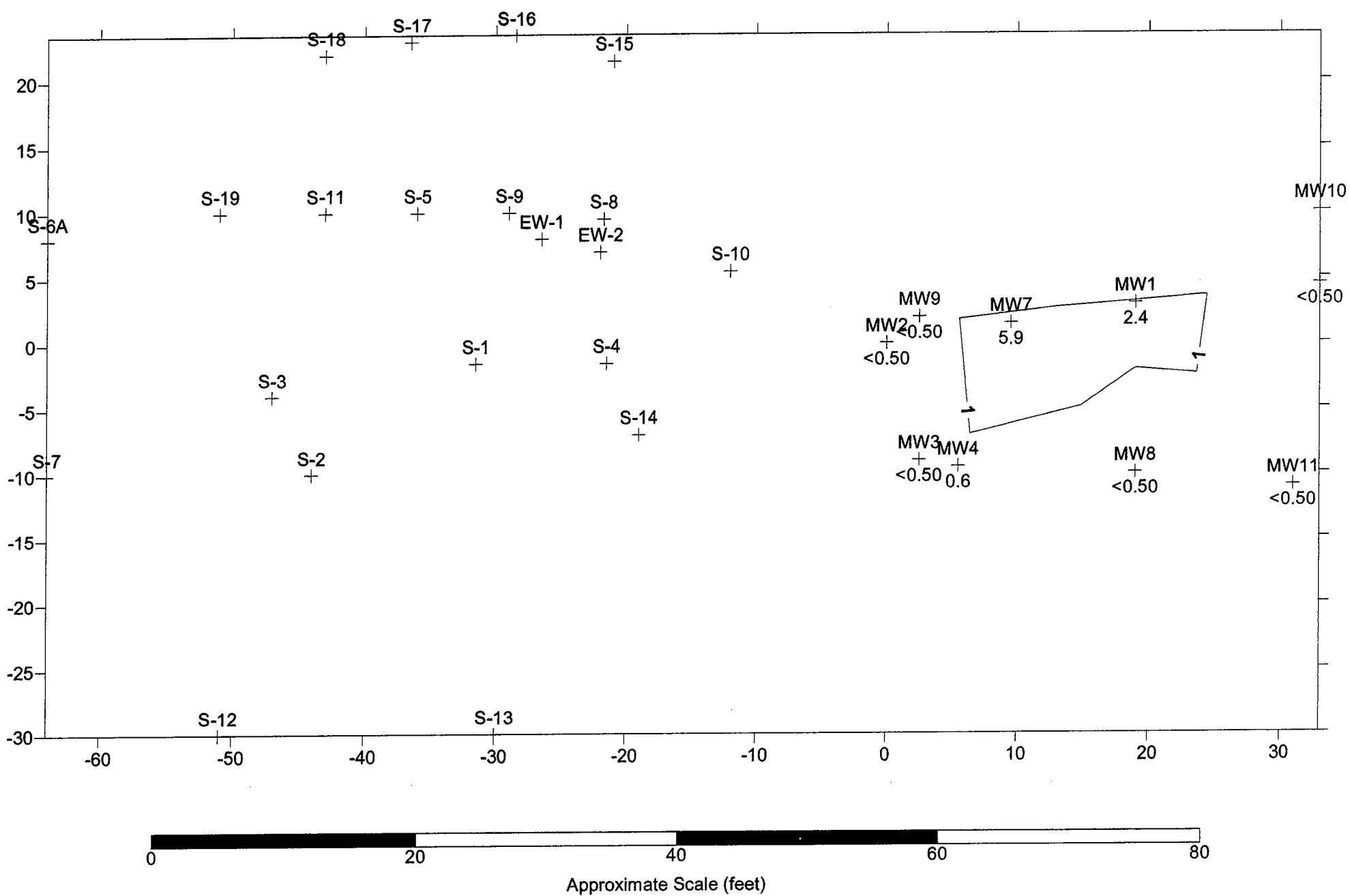
MTBE Isoconcentration Map
April 22, 2005



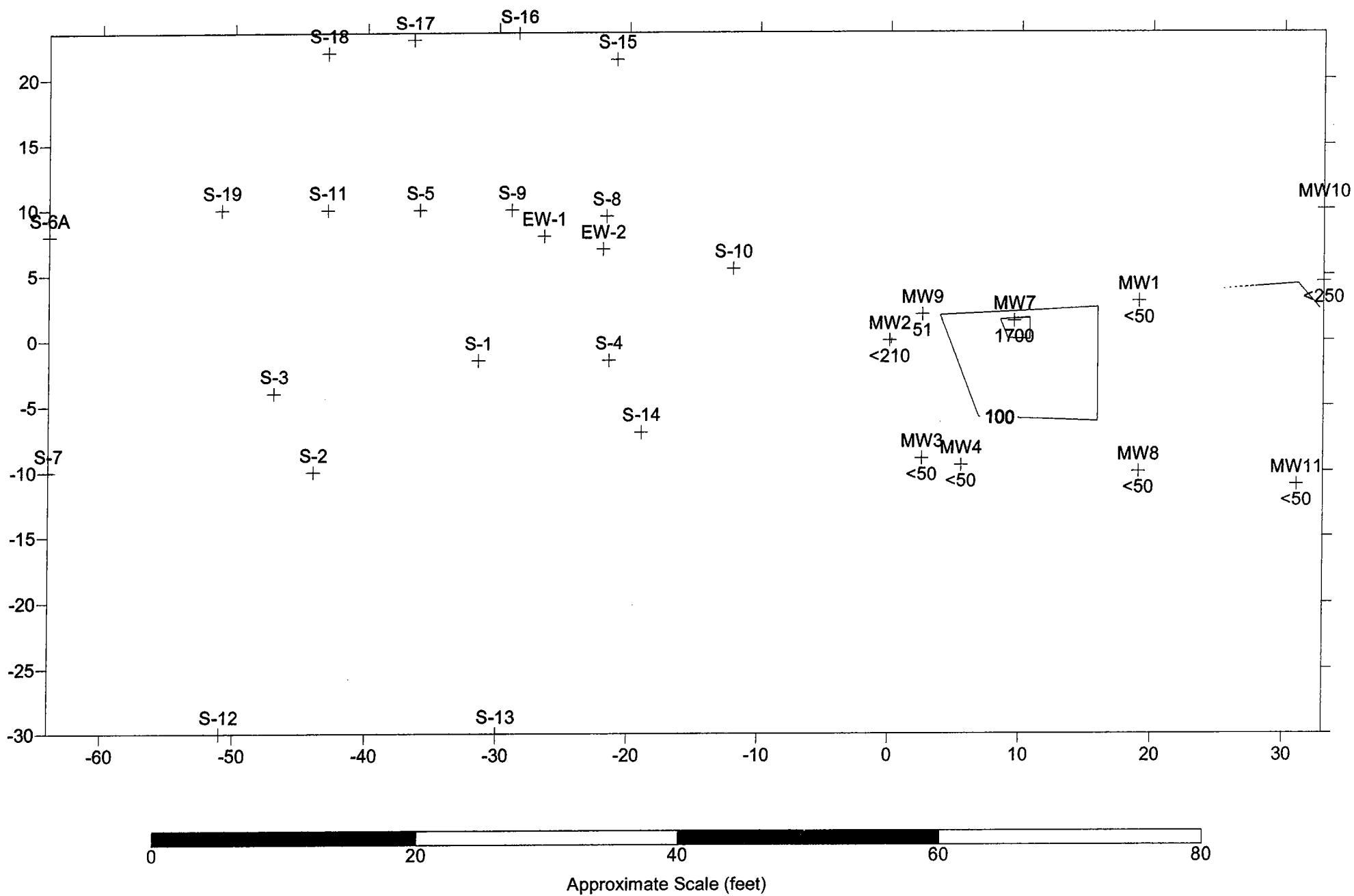
MTBE Isoconcentration Map August 2005



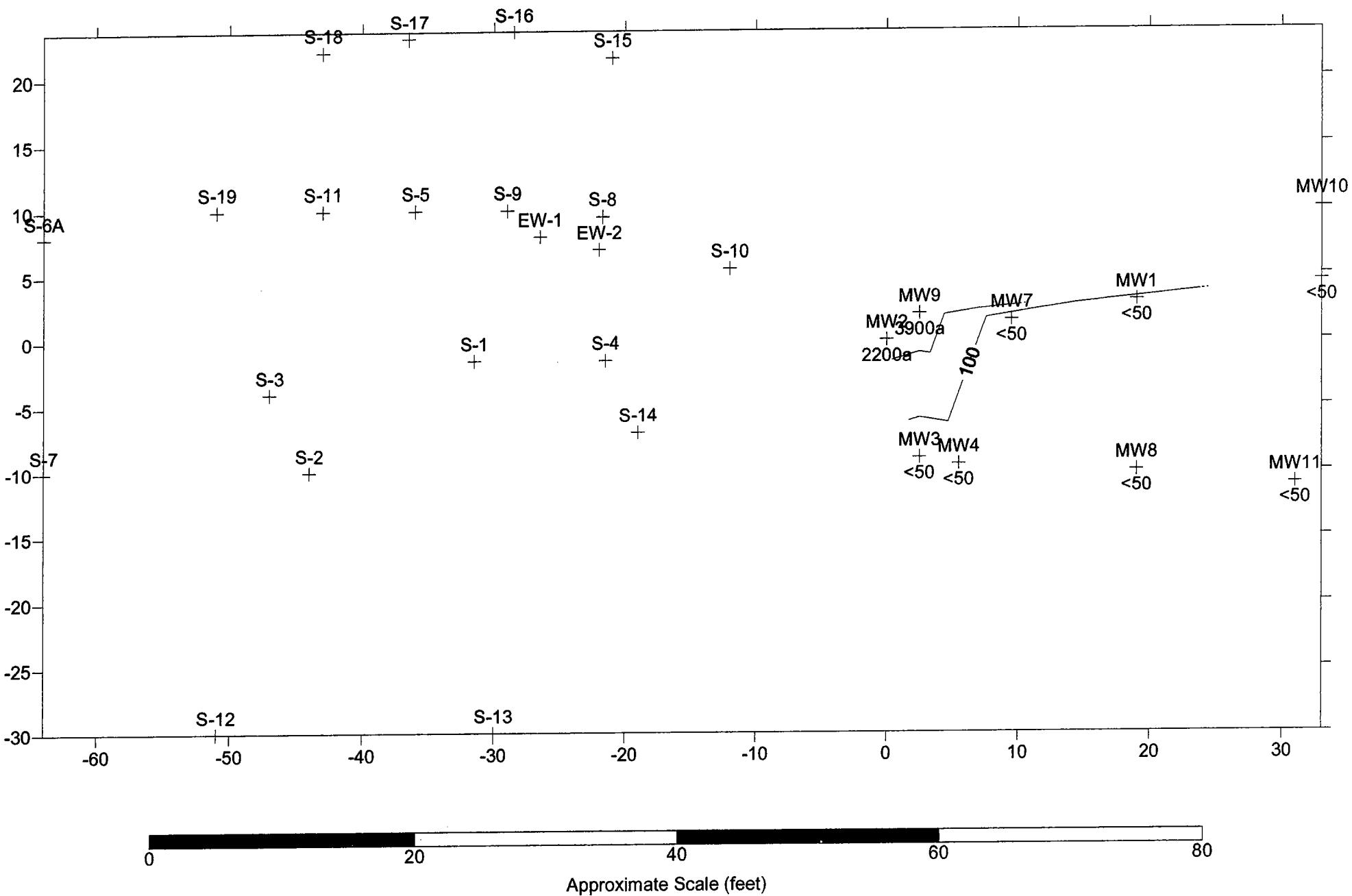
MTBE Isoconcentration Map
March 8, 2006



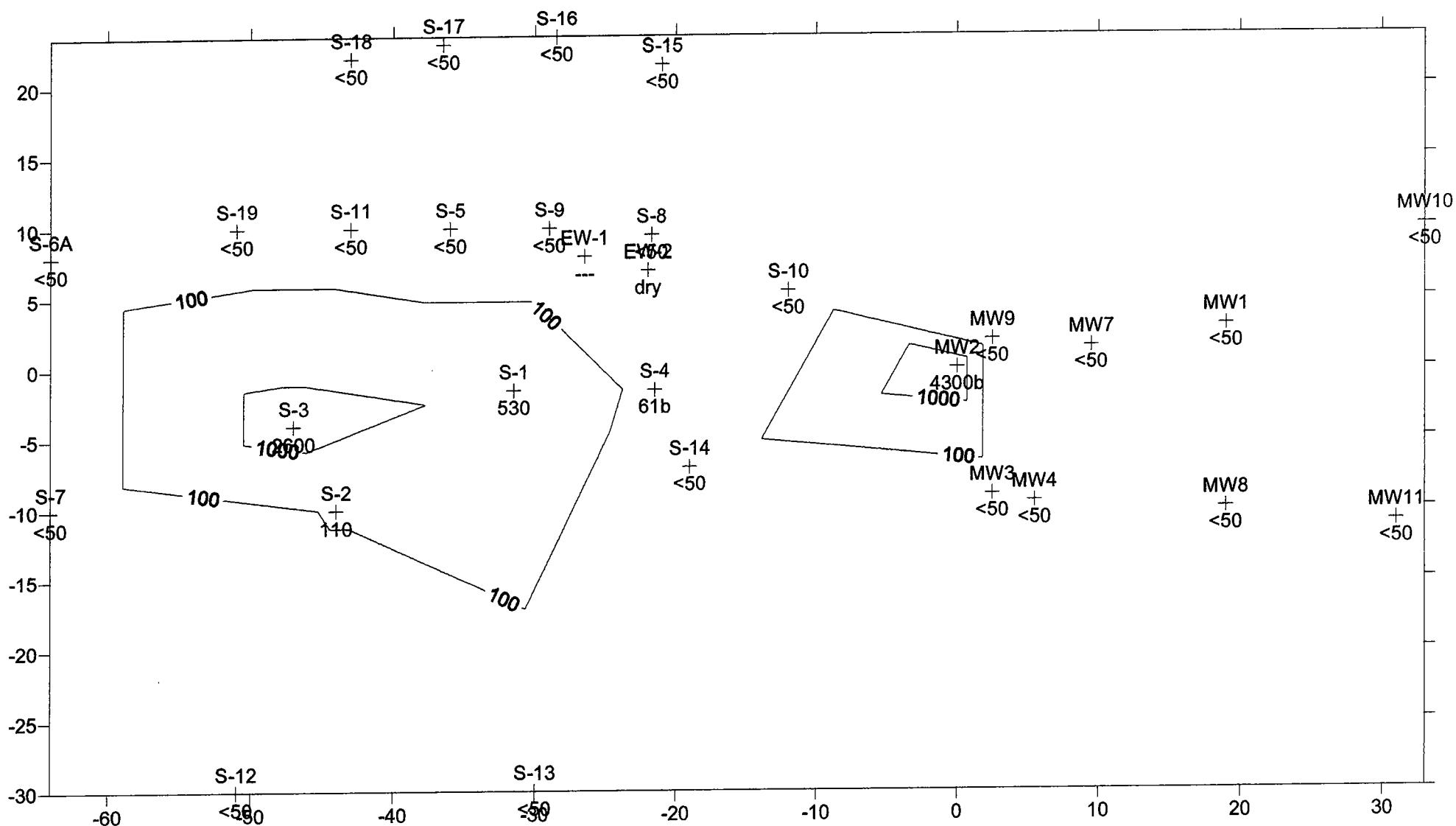
TPHd Isoconcentration Map April 6, 2004



TPHd Isoconcentration Map
April 22, 2005

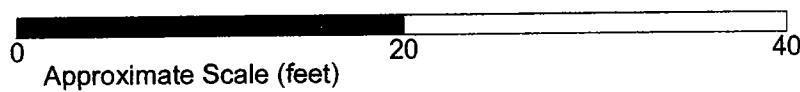


TPHd Isoconcentration Map August 2005



a= Hydrocarbons do not exhibit a typical disel pattern.

b= Aged gasoline with unresolved C8-C26 range.



TPHd Isoconcentration Map
March 8, 2006

